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Public health refers to organized efforts to prevent disease, promote health and prolong life among the population as a whole (1,2). Good public health is among the primary responsibilities of ministries of health of all countries, and Member States of the World Health Organization (WHO) Eastern Mediterranean Region are no exception. Equally, helping countries improve their capacity to avert, and when needed respond to, public health challenges is among the primary responsibilities of WHO. Noble as it is, good public health requires countries to develop their public health system, establish structures and acquire the necessary resources. One way of doing so is by implementing essential public health functions (EPHFs). These are an indispensable set of actions, under the primary responsibility of the State, that are fundamental to achieving the goal of public health through collective action (3).

As early as 1994, a landmark publication *The essential services of public health* addressed the question of EPHFs (4). In the 1990s, WHO also carried out an international Delphi study to define the concept and to confirm which functions are likely to be the most essential (5). In 2002, the Centers for Disease Control and Prevention (CDC), the Latin American Center for Health Research and the Pan American Health Organization proposed a set of 11 EPHFs for the Region of the Americas (3). Country work on EPHFs has also been done by the WHO Regional Office for the Western Pacific (6), and, more recently, the WHO Regional Office for Europe formulated its “Essential Public Health Operations” relying predominantly on a self-assessment tool (7). Much of the work undertaken by WHO has aimed to serve Member States by helping to assess and develop the EPHFs. The key questions in the assessments are (i) how are the EPHFs carried out in the country, (ii) what agency has the main responsibility and (iii) what is its capacity to perform these?

Strengthening EPHFs is essential for addressing the five areas WHO identified as priorities for the Eastern Mediterranean Region in 2012 (8). For instance, strengthening EPHFs is important for tackling noncommunicable disease prevention and control through multisectoral action and “health in all policies” (9). Similarly, EPHFs can contribute to improving health security as an integral component of national and global security. Good public health requires appropriate administrative structures and resources and calls for the development of specialized expertise. Many countries have responded by strengthening their institutional base with a public health institute (10). Such an institute is often responsible for executing many of the important EPHFs in the country.

The Regional Office for the Eastern Mediterranean has, over the past two years, undertaken the task of establishing EPHFs adapted to the needs of countries of the Region in order to strengthen and improve public health capacity within both Member States and the Regional Office (11). Many Member States of the Region offer public health services, however gaps exist in all countries – rich or poor – that underscore the need for good quality public health work. Health care services, even at their best, deal predominantly with the consequences of diseases. It is well established that these diseases are to a large extent amenable to promotive and preventive interventions and when implemented through organized public health structures are a cost-effective and sustainable way to tackle these health problems.

The work on EPHFs in the Region, which is overseen by a steering committee of public health experts and representatives of international organizations such as the World Bank, United Nations Children’s Fund, CDC and International Association of National Public Health Institutes, has identified a set of eight EPHFs adapted to the Region of which four are core and four enabling functions (Box 1). The EPHF initiative has been approached systematically and has progressed from a concept and framework to the development of assessment tools and a guide for assessment. Pilot assessment has been completed in two countries of the Region, Qatar and Morocco. This has involved assessment of the execution of EPHFs and related structures, resources and capacities, first by a national team and then an independent assessment by

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a team of international experts. Generally the experience has been positive and many development needs in the countries have been observed, while at the same time lessons have been learnt to streamline and simplify the assessment process, including the tools. The process is ongoing and currently the experience is being evaluated and the tools modified. Once completed, the next step will be to roll out the initiatives to countries of the Region.

The sole purpose of the work to strengthen EPHFs is to help countries build their capacity to protect and promote the health of their citizens in as cost-effective way as possible, the essence of good public health. Countries can consider different mechanisms to do so. Two that would be fundamental to strengthening EPHFs include strengthening public health governance of the ministries of health and establishing functionally independent national public health institutes. The World Health Organization is committed to helping countries with both.

References


Box 1 Essential public health functions – Eastern Mediterranean Region

Core functions

- Surveillance and monitoring of health determinants, risks, morbidity and mortality
- Preparedness and public health response to disease outbreaks, natural disasters and other emergencies
- Health protection including management of environmental, food, toxicological and occupational safety
- Health promotion and disease prevention through population and personal interventions, including action to address the social determinants of health and health inequities

Enabling functions

- Assuring effective health governance, public health legislation, financing and institutional structures (stewardship function)
- Assuring a sufficient and competent workforce for effective public health delivery
- Supporting communication and social mobilization for health
- Advancing public health research to inform and influence policy and practice
Examining health care spending trends over a decade: the Palestinian case

S. Hamidi,1 H.Ö. Narcı,2 F.Akinci 3 and O. Nacakgedigi 4

ABSTRACT  An analysis was made of recent health care spending patterns in the occupied Palestinian territory, in order to inform future health policy-making and planning. Data were obtained from the national health accounts for the period 2000–2011. The current level of resource allocation to the health care sector is higher than in many developed countries and is not sustainable. The private sector represents the largest source of health financing (61%) and the burden falls disproportionally on individual households, who account for 63% of private health care expenditure. Key recommendations include: building capacity in the government sector to reduce the outsourcing of health services; modifying inequitable financing mechanisms to reduce the burden on households; and allocating more resources for health promotion and disease prevention programmes. Reorientation of the health system is also needed in terms of reducing the share of spending on inpatient services in favour of more day surgery, outpatient and home-based services.

Examen des tendances en matière de dépenses de soins de santé au cours des dix dernières années : le cas palestinien

RÉSUMÉ Une analyse a été faite des tendances récentes des dépenses en soins de santé dans le territoire palestinien occupé afin de guider l’élaboration des politiques et la programmation en matière de santé. Les données ont été obtenues à partir des comptes nationaux de la santé pour la période allant de 2000 à 2011. Le niveau actuel d’allocation de ressources au secteur des soins de santé est supérieur à celui de nombreux pays développés et ne s’inscrit pas dans la durée. Le secteur privé représente la source la plus importante de financement de la santé (61 %) et la charge pèse de manière disproportionnée sur les ménages individuels qui participent à hauteur de 63 % aux dépenses de soins de santé privées. Les recommandations clés sont les suivantes : renforcer les capacités du secteur public afin de réduire l’externalisation des services de santé ; modifier les mécanismes de financement inéquitables pour réduire la charge pesant sur les ménages ; et allouer davantage de ressources aux programmes de prévention des maladies et de promotion de la santé. Il est aussi nécessaire de réorienter les dépenses du système de santé pour réduire la part allouée aux services d’hospitalisation et augmenter celle de la chirurgie ambulatoire, des consultations externes et des soins à domicile.

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Introduction

The occupied Palestinian territory (OPT) consists of 2 geographically separated areas, West Bank and Gaza Strip, administered by the Palestinian National Authority across 16 governorates. Covering an area of about 6860 km² (6500 km² in West Bank and 360 km² in Gaza Strip), the OPT comprises a very densely populated country, with more than 650 inhabitants per square kilometre. The total population of the OPT in 2013 was about 4,485,459 (50.8% male and 49.2% female), with 41% of inhabitants under 15 years of age (1).

The life expectancy at birth in the OPT was reported to be 72.6 years in 2013, having increased by 10.4 years between 1980 and 2013 (2). Gross national income per capita increased during the same period by about 45% to reach US$ 1,618 purchasing power parity, although it did not increase monotonically over this period (2). The crude death rate decreased from 4.1 in 1993 to 2.5 per 1000 people in 2013 and the infant mortality rate also fell from 32 to 18.8 per 1000 live births between 1993 and 2013 (2).

When compared with neighbouring countries such as Jordan and Egypt, the OPT shows good results in terms of health workforce indicators. However, the indicators lie well below average of the Organisation for Economic Co-operation and Development (OECD) countries. Over the past 2 decades the number of physicians per capita in the OPT increased substantially to reach 24 per 10,000 people, compared with 26 in Jordan and 28 in Egypt, but it remains well below the OECD average of 32 per 10,000 people. There were about 25 nurses per 10,000 people in 2013, much less than the average of 87 in the OECD countries, and even below the average 40 in Jordan and 35 per 10,000 in Egypt. The total bed capacity in the OPT was 5,619 beds in 2013, which can be translated into 13 beds per 10,000 people, well below the OECD average of 48, and below the average of 18 in Jordan and 17 per 10,000 in Egypt.

The Palestinian Ministry of Health (MoH) is the main entity responsible for governing, regulating and delivering health care services in the OPT. Four major providers share the responsibility of health care provision: the MoH, the United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA), various nongovernment organizations and the private sector. Primary health care centres throughout the Palestinian governorates have expanded from 454 centres in 1994 to 750 in 2012, a 65.2% increase. The MoH is the main primary health care provider, operating 61.3% of the total primary care centres (3). Secondary and tertiary care is provided mainly in the MoH and private sector.

For effective health policy development and planning, it is critically important to analyse the current health care spending and utilization patterns and the key determinants of these patterns. Unfortunately, there are very few published studies analysing and describing the patterns of spending and utilization of health services in the OPT. Further increases in government spending on health occurred after 2006, in line with the vision of the MoH to promote the health of Palestinians and to aid the poorest members of the population (4). Between 2000 and 2006, MoH allocations represented between 8% and 11% of total public funds (5). In 2013, the budget of the MoH (US$ 531 million) accounted for about 13% of the overall government budget (US$ 3,900 million). The expansion of public sector expenditure on contracted specialty care services, and on health workforce and pharmaceuticals, contributed significantly to the overall rise in government sector health spending (6). Despite the adoption of several measures to rationalize operational health expenditure, spending reached 15% above the year-end budget target (7).

The MoH budget for 2008 was US$ 322 million. According to the Health sector review report 2007, almost half of public funds (49%) were directed to hospitals compared with only 29% for primary health care (8). A study conducted by Younis et al. in 2008 found that government hospitals spent about 37% of their budget on salaries, 27% on drugs, 27% on overheads and 8% on other expenses. About 75% of the hospital expenditure was on inpatient care and 25% on outpatient care. The average costs of outpatient visits and inpatient days were US$ 13.0 and US$ 90.0 respectively (4). In another study conducted at Rafidya government hospital, Younis et al. found that the major component of the total costs was workforce salaries, at an average of 54%, followed by drugs 17%, operating costs 10%, capital costs 9% and other expenses 10% (9).

Given the limitations of the studies summarized above, and in order to inform future health policy-making and planning, the main purpose of this study was to analyse health care spending patterns in the OPT over the period 2000–11. Specifically, we aimed to analyse the following: total health care expenditure by source of finance, by function and by provider; government spending by function and by provider; private spending by function and by provider; private out-of-pocket spending by function and by provider; and non-profit institutions serving households expenditure by function and by provider.

Methods

Data source

The data utilized in the study were published jointly by the MoH and Palestinian Central Bureau of Statistics in the Palestinian national health accounts from 2000 to 2011. National health accounts are a powerful health policy tool that describe how much a country
spends on health, and map out in detail the sources and uses of health care expenditure (10). The method is designed to give a comprehensive description of resource flows in a health system, showing where resources come from and how they are used. National health accounts help both health and social planners to identify health policy issues, develop policy interventions and monitor the impact of interventions.

We analysed the total average health care spending in the OPT over the period 2000–11, and the annual trends, by source of funding, by type of health care function and by type of health care provider. Among funding sources we focused on private household out-of-pocket payments.

The Palestinian Central Bureau of Statistics adopts a number of measures to ensure data quality and coverage. However, despite these measures, some problems and challenges remained in the development of coverage and the comprehensiveness of the data. This was primarily because health expenditure covered by the OPT excluded those parts of Jerusalem which were occupied in 1967 and the Gaza Strip, due to the lack of detailed data from its sources.

**Definition of key study constructs**

To address the research objectives of the study, all constructs used including sources of finance, functions and providers were defined in accordance with the definitions of the Palestinian Central Bureau of Statistics (11). The Bureau has adopted the System of health accounts 2000 developed by the OECD (12).

**Total health expenditure**

Total health expenditure measures the value of outlays for the final consumption of health care goods and services and for the production of certain activities defined as health activities. It is broken down into 2 entities. The first is the current expenditure incurred for health care goods and services, such as inpatient curative care; medical goods dispensed to outpatients and administration; and insurance. The second is gross capital formation in health care industries. Expenditures for gross capital formation are those that add to the stock of resources of the health care system and last more than an annual accounting period. Capital formation in terms of up-to-date equipment and the availability of essential supplies bolster the quality of care provided by health facilities, improve results in diagnostic and treatment services and contribute to the long-term sustainability of service provision (12). In the case of the OPT, total health expenditure includes gross capital formation in health care industries, but only at an aggregated amount, thus missing data on gross capital formation by funding sources. Therefore, the study was able to use total health expenditure data composed of current health expenditure in all the analyses (13–15).

**Funding source**

There are 3 main sources of finance for the health system of the OPT: public; private; and the rest of the world.

The government acts as the main public financing source. It comprises all institutional units of central and local government including the MoH and Military Health Services via the Ministry of Finance. Non-profit institutions that are controlled and mainly financed by government units are also included.

Private sources include private insurance enterprises, private household out-of-pocket expenditure and non-profit institutions serving households, none of which belong to the government sector. Non-profit institutions serving households, none of which belong to the government sector. Private insurance enterprises comprise both for-profit and non-profit institutions serving households, none of which belong to the government sector. Private insurance enterprises comprise non-profit institutions which provide goods or services to households free or at prices that are not economically significant.

The “rest of the world” category represents the list of projects that support the health sector as registered in the Ministry of Planning. These projects cover primary and secondary health care activities from a variety of donors. The projects also fund special vertical programmes, such as the tuberculosis programme and maternal and child health, and capital infrastructure establishments.

**Function**

The functional categories used in this study comprised only health care functions and, due to lack of data, excluded health-related functions such as capital formation, environmental health, and research and development in health.

The health care functions analysed here included: inpatient curative care; outpatient curative care; medical goods dispensed to outpatients; prevention and public health services; and other. The “other” category included services of rehabilitative care; inpatient long-term nursing care; ancillary services to health care; and prevention and public health services.

**Provider type**

Hospitals were classified according to type: general hospitals; mental health and substance abuse hospitals; and specialized hospitals.

**Statistical analysis**

The data were analysed using Stata, version 12, and Microsoft Excel. Descriptive statistics were used to show the health care spending trends during the study period. To examine the relationship
between current health expenditure per capita and GDP per capita, a regression analysis was performed using the natural log of current health expenditure as the dependent variable over the study years and the natural log of GDP as the independent variable. Bar charts were used to present the data broken down into: current health expenditure per capita, current health expenditure by funding source, current health expenditure by health care provider, current health expenditure by health care function, and private health expenditure.

Results

Trends in current health expenditure as a share of GDP

Figure 1 presents the current health expenditure and its share of the GDP across the study years. Current health expenditure in the OPT increased from US$ 384 million in 2000 to US$ 1201 million in 2011. Current health expenditure per capita grew from US$ 137 in 2000 to US$ 308 in 2011, a 125% increase, while GDP per capita increased from US$ 1498 to US$ 2506 over the same period, a 67% increase. Although GDP per capita decreased from 2000 to 2002, it increased on a regular basis after 2002 until 2010. Current health expenditure per capita decreased from 2000 until 2003, and then increased from the year 2003 onwards. However, the total health expenditure as a percentage of GDP, at current prices, increased from about 9% in 2000, to peak at nearly 15% in 2008, and then decreased to 12% in 2011.

The results of regression analysis (F = 43, P = 0.0001, adjusted R² = 80%) showed that there was a strong positive relationship between GDP per capita and current health expenditure per capita (Figure 2). If GDP increased by 1.2%, current health expenditure would increase by 1%. In other words, if the OPT faced serious financial sustainability problems, then health care utilization would be highly likely to suffer.

Trends in total health expenditure

Analysis by financing source

Over the period 2000–11, the government sector contributed on average about 36% of health funding, private households out-of-pocket expenditure contributed 39%, and non-profit institutions serving households, including UNRWA, contributed on average about 22% of the total health expenditure. Direct contributions by the rest of the world to funding health services during the same period averaged about 3%, as shown in Figure 3.

Government expenditure constituted about 36% of total per capita expenditure with a range of 31% to 41%. Government expenditure per capita increased by 142% from US$ 45 in 2000 to US$ 109 in 2011. Health expenditure on outsourcing health services outside MoH also increased from US$ 60 in 2005 to US$ 132 million in 2011, and to US$ 147 million is 2013. In 2013, about 26% of the MoH budget was spent on health services outsourced from other providers. About 50% of this amount...
was spent on 4 main services including oncology, haematology, neurosurgery and cardiac catheterization.

**Analysis by function**

As shown in Figure 4, the analysis of current health expenditure for the different health care functions showed that on average 25%, 37%, 18% and 21% was spent on inpatient curative care, outpatient curative care, medical goods dispensed to outpatients and other services respectively. Health expenditure for prevention and public health services (covered in the “other” category) ranged between 6% and 12% of current health expenditure. The level of spending on medical goods dispensed to outpatients (about 18% of the current health expenditure) may indicate insufficient availability of medicines in the government sector.

**Analysis by provider**

The breakdown of current health expenditure by types of provider showed that hospitals accounted for...
about 36% of current health expenditure (Figure 5). Providers of ambulatory care recorded a rise in primary health care services between 2000 and 2011, including outpatient activities and independent outpatient clinics of hospitals. The value of health expenditure for this category accounted for 28% of current health expenditure. Retail sales and other providers of medical goods accounted for 17% of current health expenditure. Total expenditure by providers on nursing and residential care facilities in all sectors in the OPT was equivalent to about 3% of current health expenditure. Expenditure on general health administration and insurance companies accounted for 9% of current health expenditure, and “other” accounted for 11% of current health expenditure (Figure 5).

Figure 4 Current health expenditure (CHE) by funding source in the occupied Palestinian territory over the years 2000–2011

Figure 5 Current health expenditure (CHE) by health care provider in the occupied Palestinian territory over the years 2000–2011
Trends in government expenditure

Analysis by function
Analysis of government spending on different types of health care revealed that, on average over the decade, inpatient curative care constituted 59% of expenditure, outpatient curative care 26%, prevention and public health services 14% and other types of care 1%.

Analysis by provider
Analysis by type of provider showed that hospitals accounted for 58% of government expenditure, public clinics outpatient care centres 17%, health administration and insurance 14% and other 12%. Over 40% of government payments to hospitals were made to general hospitals. Nearly all the payments included in the “other” category were made to the rest of the world.

Trends in private expenditure
During 2000–11, the per capita private expenditure increased from US$ 90 to US$ 196 (117%). Given that private sources contributed disproportionately to the financing of the health care system—on average 61% of all health expenditure—further breakdown of private sources was made to analyse the extent of household contributions (Figure 6). On average across 2000–11, household health expenditure reached 63% of all private sources, non-profit institutions serving households 34% and private insurance enterprises 4%. During the same period, expenditure per capita of private insurance enterprises increased from US$ 3.5 to US$ 5 (29%), expenditure per capita of household out-of-pocket increased from US$ 54 to US$ 133 (145%) and expenditure per capita of non-profit institutions increased from US$ 32 to US$ 59 (82%).

Trends in private households’ out-of-pocket expenditure
Households contributed on average 39% of current health expenditure in the period 2000–11, which, despite the large public health infrastructure in the OPT, comprised the largest source of financing. Household out-of-pocket expenditure per capita increased from US$ 54 in 2000 to US$ 133 in 2011, a 145% increase.

Analysis by function
The average out-of-pocket health expenditure analysed by health function was as follows: outpatient curative care 27%, non-classified services of curative care 17%, medical goods dispensed to outpatients 42% and other 14%. An increase in the out-of-pocket expenditure covered in the “other” category was due largely to the inclusion of health administration and insurance costs starting from 2007. The out-of-pocket contribution for inpatient curative care accounted for less than 1%, except in 2007 when it was nearly 6%. Overall, the out-of-pocket expenditure for prevention and public health services accounted for about 1%.

Analysis by provider
On average, the out-of-pocket household health expenditure on different types of providers were as follows: hospitals 18%, providers of ambulatory care 31%, retail sales and other providers of medical goods 42%, and other 9%. All the payments made to hospitals in all years were to general hospitals. At least 40% of the out-of-pocket spending made to ambulatory care providers was accounted for by for-profit private clinics outpatient care centres. The main reason for the rise of payments to providers in the “other” category, especially after 2007, was the addition of health administration and insurance payments to the out-of-pocket expenses.

Figure 6 Breakdown of private health care expenditure in the occupied Palestinian territory over the years 2000–2011
Trends in private non-profit institutions serving households expenditure

Expenditure per capita of non-profit institutions increased from US$ 32 in 2000 to US$ 59 in 2011, an 82% increase.

Analysis by function

When analysed by health care function, the expenditure on non-profit institutions serving households were as follows: inpatient curative care 12%, outpatient curative care 80%, and other 8%. The notable increase in expenditure in the “other” category during the years 2008–10 was due mainly to health administration and insurance payments.

Analysis by provider

On average, spending on non-profit institutions serving households to different health care providers were as follows: hospitals 36%, nursing and residential care facilities 13%, outpatient care clinics provided by UNRWA 24%, outpatient care clinics provided by non-profit institutions serving households 9% and other 18%. Almost all the payments to hospitals were made to general hospitals. Payments to offices of physicians rose notably, especially in the years 2006–08 when there was a major decrease in payments to outpatient care centres provided by non-profit institutions serving households.

Discussion

Our results show that households and government bear the heaviest burden of funding of health services in the OPT. This raises issues such as accessibility, inequity, health finance sustainability and allocative efficiency in terms of return on investment in health and the opportunity cost of that investment, and the need to consider possible reallocation of resources to other sectors to maximize return. Several other significant findings from our study are discussed below.

High level of government spending on health services

Government health expenditure increased markedly from 2000 to 2011, which can be attributed to increasing salaries to finance unplanned and excessive health sector employment, cost of pharmaceuticals and outsourced health services. The total health expenditure as a percentage of GDP, at current prices, was about 12.3% in 2011. Total health expenditure per capita was US$ 308 in 2011 and the government’s contribution to this was about 40%. Government expenditure per capita increased from US$ 45 in 2000 to US$ 109 in 2011, a 142% increase. This was despite the Palestinian fiscal crisis which affected the ability of MoH to secure supplies for its hospitals and clinics, resulting in severe shortages in essential medicines.

A recent assessment of the MoH showed that its salary budget had risen over 2000–05 from US$ 48 million in 2000 to US$ 83 million in 2005. Health expenditure on outsourcing health services increased 10-fold from 2000 to 2005 (US$ 6 million to US$ 60 million). A total of 30,000 cases were referred outside of MoH facilities in 2005, costing over US$ 60 million, of which 40% were spent in neighbouring countries. The MoH specifically states “there are enormous hidden financial and social costs to the families of those referred abroad; costs that put some families in debt or are only affordable for the better off.”

About 85% of this amount was spent on curative care and only 14% on prevention and public health services. Our results also showed that about a quarter of the MoH budget was spent on health services outsourced from other providers, and about half of the budget was spent on salaries. The expanding salaries expenditure will have reduced the funds available for operating costs, which is likely to have adversely affected health utilization, quality outcomes, allocative efficiency and health finance sustainability. Donors have financed the bulk of capital investments in the past decade, and hence government budget allocations to capital investment were minimal. The high degree of dependence on donor funding, which is included within the government budget, raises serious doubts about the sustainability of several key programmes.

Health services outsourced by the MoH constitute a significant part of the national health budget. Health expenditure on outsourced services have been on the rise (from US$ 60 in 2005 to US$ 147 million in 2013), reducing funds available for operating costs. The increasing level of outsourced services is not fiscally sustainable. Outsourced services referred abroad are also more complicated than local referrals, and thus more expensive than those provided by Palestinian health care institutions. The referral process is currently centralized under the authority of the General Directorate for Health Insurance, and is subjected to clear and stringent eligibility criteria. The MoH would be advised to weigh the costs of this investment, and its ability to attract highly skilled health professionals, against the benefits of purchasing these services from outside providers with existing capacity in the future. The MoH needs to provide well-developed health facilities and sufficient skill-mix of human resources. It should also develop its contracting capacity to better manage the health needs of the population.

Government hospitals consumed about 59% of the MoH budget, yet appear to be inferior to private hospitals in terms of efficiency and quality. To enhance the ability of hospitals to tackle the financial sustainability issue, there must be a division between finance and provision. Transformation of the current government health insurance scheme into a separate agency which controls its own financial resources.
could encourage competition among government and private providers and improve quality and efficiency.

High level of spending on curative care and hospital services

Over the period 2000–11, the OPT spent on average about 61% of total current health expenditure on curative inpatient and outpatient care. This percentage was even higher in the government sector, at about 85% of the government health expenditure. Spending on inpatient curative services was the highest costing component, at 49% of current health expenditure, and 59% of government expenditure. Inpatient care is highly labour-intensive and expensive. Injuries due to conflict-related trauma contribute to this high percentage because they require special programmes with a much higher average cost as compared with programmes for the general population. This reduces the resources available for preventive and general care. On the other hand, over the same period, the share of total OPT spending on preventive and public health services was 7.7%, and the share of government spending on preventive and public health services was 14.0%. The private sector has low occupancy rates because they are more expensive than public hospitals. Underutilized hospitals are inefficient since a large portion of hospital costs are fixed, and the cost per patient is much higher.

There is little doubt that curative care is not as cost-effective as relatively inexpensive preventive services. It has been shown that investing in a well-defined package of evidence-based clinical preventive services is effective in preventing disease and offers very good economic value (20). It is therefore suggested that deliberate efforts be taken to shift resources in the OPT from curative to preventive services. Policy-makers involved with health promotion should re-evaluate levels of current spending in the health sector in order to be sure about future financial sustainability and return on investment. Health promotion and disease prevention efforts should be implemented by diverting additional resources.

Reorientation of the health system is needed also in terms of reducing the share of spending on inpatient services in favour of more day surgery, outpatient and home-based services. The payment methods for hospitals also play a major role in this shift. The way hospitals are currently organized and financed encourages excessive hospital utilization. Government hospitals in the OPT are reimbursed using global budget payment arrangements, which reward hospitals for doing more and which provide weak incentives for cost containment. Revision of hospital payment systems to include capitation and diagnosis-related groups are some possible options.

High level of out-of-pocket expenditure by households

The private sector accounted for the largest share of health funding in the OPT — about 61% of total current health expenditure. Remarkably, households bore most of this cost, as they contributed about 63% of private spending, exceeding the contribution of the government to health. The results showed that on average over the study period, households contributed 39% of current health expenditure, which is the largest source of financing. Households’ out-of-pocket expenditure per capita increased from US$ 54 in 2000 to US$ 133 in 2011, a 145% increase.

The World Bank has reported that the poorest population quintile of the OPT spent 40% of their income on medical expenses; a staggering financial burden (5). The burden on individual households should be reduced by a modified financing system. Global evidence indicates that it is difficult to achieve universal coverage and a high level of financial protection if out-of-pocket payments are higher than 30% of current health expenditure (21). The OPT is on the borderline, where about one-third of the burden of financing the health system falls primarily on households. A reduction in out-of-pocket payments would be an additive advantage as the OPT plans to move towards universal coverage.

Our results also showed that on average about 42% of the amount spent by households was spent on pharmaceuticals. Despite measures by the MoH to improve the efficiency of the pharmaceutical sector — by training physicians, using generic drugs, introducing an essential medicines list, enforcing pharmaceutical pricing policy and regulating the retail pharmacy market to prevent self-prescribing of drugs — the problem of high pharmaceutical prices is evident in both the government and private sectors, and households bear the greatest cost. The domestic pharmaceutical industry can produce about 700 different medicines, which satisfies the expectations of half of Palestinians (22). However, there is a lack of real competition in the domestic pharmaceutical market (6). The MoH procures pharmaceuticals at 7 times higher than international procurement prices (6). Besides, access of the OPT to the neighbouring Arab markets, which could have provided medications at lower prices, is hindered by the trade restrictions of the Paris protocols, part of the Oslo Accords with Israel. Moreover, the shared customs system prevents the international pharmaceutical industry from implementing differential pricing for the OPT. The OPT national health accounts provide limited data on the cost of pharmaceuticals and other durable and non-durable medical products. Therefore, this study was unable to perform further analyses to address the issue of pharmaceutical expenditure, especially from the perspective of households.

This article was an attempt to analyse health care spending patterns in the OPT to inform future health
policy-making and planning. It is also an invitation to other researchers in the field to apply quantitative techniques to measure and provide a deeper insight into how health services are financed and organized. However, there is a need for additional research on health expenditure patterns in the OPT. Only this kind of understanding can help us to ensure that we are moving forward in our journey to enhance the efficiency and sustainability of the health system in the OPT.

**Key messages**

- Health policy-makers in the OPT should reassess the current spending levels in the health care sector to ensure future financial sustainability and return on investment.
- Current financing mechanisms should be modified to reduce the burden on individual households.
- More resources should be allocated for health promotion and disease prevention programmes.

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**References**

Estimation de la fraction attribuable du cancer du poumon liée au tabac au Maroc

M. Obtel,1 C. Nejjari,2 N. Tachfouti,2 N. Abda,3 L. Belakhel4 et S. Mathoulin-Pelissier5

Estimating attributable fraction of lung cancer linked to smoking in Morocco

ABSTRACT The objective of this research was to estimate the attributable fraction (AF) of lung cancer linked to smoking in Morocco. The estimation was based on the SAMMEC (Adult Smoking-Attributable Mortality, Morbidity and Economic Costs) method based on the Levin formula to calculate AF linked to tobacco. Data about frequencies, association measures and relative risks were taken from available sources. The AF of lung cancer linked to smoking was about 87%, and around 3049 cases of this cancer in men could be avoided if tobacco use could be prevented. About a 10% reduction in smoking prevalence would result in a reduction of 346 lung cancer cases. Our study provides additional important elements for further advocacy to policy-makers to implement a tobacco control strategy based on a prevention policy in line with the epidemiological situation which could avoid a huge burden on the country.

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RÉSUMÉ L’objectif de l’étude est d’estimer la fraction attribuable (FA) du cancer du poumon liée au tabac au Maroc. La méthode du calcul de la mortalité, de la morbidité et du coût économique liés au tabagisme chez l’adulte (SAMMEC - Adult Smoking-Attributable Mortality, Morbidity and Economic Costs), basée sur la formule de Levin, a été utilisée dans notre étude. Les données sur la fréquence et les risques relatifs ont été prises des sources disponibles. La FA du cancer du poumon masculin lié au tabac était d’environ 87 %, et près de 3049 cas de ce cancer chez l’homme pourraient être évités si on arrivait à prévenir le tabagisme. Une baisse de 10 % de la prévalence du tabagisme permettrait d’éviter 346 cas de cancer du poumon. Notre étude présente des éléments additionnels importants pour renforcer le plaidoyer auprès des décideurs politiques afin de mettre en place une stratégie de lutte antitabac basée sur une politique de prévention plus adaptée à cette situation épidémiologique et à même d’épargner un énorme fardeau au pays.

Estimating attributable fraction of lung cancer linked to smoking in Morocco

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Introduction

Depuis la première publication de Doll et Hill en 1950 mettant en évidence les liens entre l’usage du tabac et le cancer du poumon (1), les preuves scientifiques se sont accumulées sur la relation causale entre le tabagisme et les effets sur la santé : d’abord les cancers de la bouche puis les maladies cardio-vasculaires et le cancer du poumon (2). Aujourd’hui, le tabagisme a été identifié comme étant le deuxième déterminant de santé pour la mortalité, toutes causes confondues, dans le monde (3).

En 2013, le tabagisme direct demeure une menace sérieuse pour la santé publique mondiale, entraînant près de 6 millions de décès chaque année et causant des centaines de milliards de dollars de dommages économiques annuellement sous forme de dépenses excessives de santé et de productivité perdue (4). L’Organisation mondiale de la Santé (OMS) identifie le tabac comme la cause principale de décès évitables dans le monde et estime qu’il tua 1 milliard de personnes au cours du XXIe siècle (4.

Le Maroc est un pays d’environ 34,6 millions d’habitants avec un revenu mensuel moyen par personne s’élève à USD 120 (10). Les mesures de lutte contre le tabac, notamment la législation antitabac (1996), semblent avoir peu d’impact sur la prévalence du tabagisme (nombre de fumeurs dans la population). Cette prévalence est passée de 17,2 % à 18,5 % chez les adultes entre 2000 et 2006 (11).

La méthodologie d’estimation de la FALT la plus utilisée est celle basée sur la formule de Levin (20). Cette FA se définit dans la population totale comme « la fraction de tous les cas (exposés et non exposés) qui ne seraient pas survenus si l’exposition avait été prévenue, évitée » (20). La notion de cas attribuables à une exposition est valide seulement s’il a été démontré une relation de cause à effet entre exposition (tabac) et effet de santé (cancer du poumon) (21), ce qui pour notre étude est largement démontré.

La FALT prend en compte aussi bien la fréquence du tabagisme (la proportion de fumeurs dans la population générale) que le risque relatif (RR) associé aux quantités de tabac fumées (20). Les Centers for Disease Control and Prevention (CDC) ont développé une application disponible via Internet qui utilise les estimations des parés, estimées et les formules d’estimation du risque attribuable pour évaluer la morbidité et la mortalité du cancer mais aussi des maladies cardio-vasculaires et respiratoires associées au tabagisme (22) : Adult Smoking-Attributable Mortality, Morbidity and Economic Costs (SAMMEC). Cette méthode permet de tenir compte de la proportion selon le statut d’ancien fumeur, de fumeur actuel et de la population est l’indice utilisé pour mesurer le poids de la prévention (9). Cette méthode prend en compte la prévalence du tabagisme dans la population concernée et le risque relatif (RR) associé aux quantités de tabac fumées. Parmi les interprétations de la FALT, on peut citer le fait de conclure qu’en l’absence d’exposition au tabac, le risque de mortalité et la morbidité liés à ce facteur seraient moindres (8,9).

Méthodes

Modélisation

La méthodologie d’estimation de la FALT la plus utilisée est celle basée sur la formule de Levin (20). Cette FA se définit dans la population totale comme « la fraction de tous les cas (exposés et non exposés) qui ne seraient pas survenus si l’exposition avait été prévenue, évitée » (20). La notion de cas attribuables à une exposition est valide seulement s’il a été démontré une relation de cause à effet entre exposition (tabac) et effet de santé (cancer du poumon) (21), ce qui pour notre étude est largement démontré.
non-fumeur dans la population totale. Les risques relatifs liés au tabac dans cette application sont extraits de la littérature et nous avons utilisé cette méthode pour calculer la FA du cancer de poumon lié au tabac chez les personnes âgées de 35 ans et plus (FA1) (22). En effet, cette limite est liée aux données utilisées dans les estimations de cette application. L’équation utilisée est la suivante :

\[
FA1 = \frac{[P0 + P1 × RR1] + (P2 × RR2 – 1)]}{[P0 + P1 × RR1] + (P2 × RR2)}
\]

 où P0, P1 et P2 représentent la prévalence des non-fumeurs, fumeurs et ex-fumeurs, respectivement. RR1 et RR2 font référence au risque de cancer des fumeurs et ex-fumeurs, respectivement, par une pathologie liée au tabac comparé à une population de référence de non-fumeurs.

De plus, en complément, nous avons utilisé l’estimation usuelle de la FALT selon la formule de Levin pour l’ensemble de la population, c’est-à-dire avec les personnes âgées de moins de 35 ans (20,22) :

\[
FA2 = \frac{[P × (RR – 1)]}{[P × (RR – 1) + 1]}
\]

Dans cette formule, RR est le risque relatif et P est la fréquence du tabagisme

Sources de données

**Données sur la prévalence du tabac**

Les taux de prévalence du tabac avec les intervalles de confiance chez les sujets âgés de 18 ans et plus ont été obtenus de l’enquête nationale MARTA (11). C’est une étude transversale réalisée en 2006 auprès d’une population marocaine âgée entre 15 et 90 ans, choisie aléatoirement. L’échantillonnage a été fait avec une stratification par région, par niveau socio-économique, par âge et par sexe, prenant en considération les ratios urbain-rural dans chaque région. Le pays a été divisé en sept régions : région centrale du Nord (Fès et ses environs), région occidentale (Casablanca et ses environs), région du Nord-Ouest (Tanger et ses environs), région orientale (Oujda et ses environs). Dans chaque région, une préfecture, qui est une division administrative, a été aléatoirement choisie selon la taille de la population. Les sujets interrogés ont été classifiés comme fumeurs s’ils avaient fumé au moins 100 cigarettes jusqu’à la date de l’entretien (des fumeurs quotidiens s’ils ont fumé quotidiennement et des fumeurs occasionnels s’ils ont fumé quelques jours), ex-fumeurs s’ils avaient fumé mais avaient arrêté (pour une période > 3 mois) et non-fumeurs s’ils n’avaient jamais fumé ou avaient fumé moins de 100 cigarettes jusqu’à la date de l’entretien. Nous avons extrait de cette étude les données de la prévalence du tabac selon le sexe pour la population adulte âgée de 18 ans et plus pour estimer la FALT, et les données de la prévalence des anciens fumeurs et fumeurs selon le sexe pour les sujets âgés de 35 ans et plus pour estimer la FA du cancer du poumon liée au tabac pour ces tranches d’âge.

**Données sur les risques relatifs (RR)**

Pour l’application SAMMEC (22), nous avons utilisé les risques relatifs de l’étude Cancer Prevention Study II (CPS-II) de l’American Cancer Society donnés pour une population de plus de 35 ans et selon le sexe. Puis, pour l’estimation de la FA2 (globale dans la population marocaine sans tenir compte du statut d’ancien fumeur), les RR ont été extraits de l’étude sur les causes de cancers en France en 2000 réalisée par le CIRC (8).

**Données sur l’incidence du cancer du poumon**


**Prévision de l’évolution de la fraction attribuable**

Des études au niveau de la population, surtout urbaine, montrent que le tabagisme augmente considérablement chez les femmes au Maroc. Une estimation prévisionnelle à l’horizon 2025 a donc été faite en utilisant comme hypothèse que les femmes marocaines pouvaient à l’avenir adopter les mêmes comportements que les femmes françaises quant à la consommation de tabac. Les données de prévalence du tabagisme chez les femmes en France ont donc été utilisées (26). Les données d’incidence de cancer du poumon en l’an 2025 ont été extraites de GLOBOCAN 2012 (27).

Différents scénarii de diminution de la prévalence au Maroc ont été utilisés pour avoir une évolution prévisionnelle de la fraction attribuable du cancer du poumon liée au tabac.

Par ailleurs, nous n’avons pas rapporté l’estimation de la mortalité attributable au cancer du poumon car elle a fait l’objet d’autres études au Maroc (28).

**Résultats**

Selon la prévalence des fumeurs, des ex-fumeurs et des non-fumeurs par sexe et par tranche d’âge (35-44, 45-54, 55-64 et 65 ans et plus) en 2006 dans la population marocaine, nous avons donc obtenu les fractions attribuables correspondantes (Tableau 1) : pour les hommes, la fraction attributable du cancer du poumon liée au tabac varie de 88 % à 92 % alors que chez les femmes, cette FA est d’environ 40 %. La FALT pour le cancer du poumon diminue avec l’âge ( diminution de la prévalence voire prévalence de 0 % chez les femmes de plus de 65 ans).

Dans l’ensemble de la population marocaine, quel que soit l’âge et
sans tenir compte du statut d’ancien fumeur, la FALT a été estimée à 87 % chez les hommes et 25 % chez les femmes. Environ 3049 cas de cancer du poumon chez les hommes selon le Registre du cancer de Casablanca et 205 cas selon le Registre de Rabat pourraient être évités. Ce nombre reste très largement inférieur chez les femmes (Tableau 2).

À l’horizon 2025, en faisant l’hypothèse d’une prévalence de femmes marocaines fumeuses identique à celle estimée en France (28 %) aujourd’hui, la FALT serait de 76 % chez les femmes et plus de 400 cancers du poumon seraient attribuables au tabagisme et donc hypothétiquement évitables (Tableau 3).

Enfin, dans la population globale, une diminution de 10 % de la prévalence actuelle au Maroc (18,1 %) permettrait d’éviter près de 350 cas de cancer du poumon, et une diminution de 20 % éviterait 700 cancers du poumon. Le coût évité serait ainsi de USD 4,2 milliards et 8,4 milliards, respectivement.

**Tableau 1 Fraction attribuable (FA1) du cancer du poumon liée au tabac selon l’âge et le sexe pour la population de plus de 35 ans (IJ)**

<table>
<thead>
<tr>
<th>Tranche d’âge (ans)</th>
<th>Ex-fumeur (%)</th>
<th>Fumeur actuel (%)</th>
<th>Non-fumeur (%)</th>
<th>FA1 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hommes</td>
<td>Femmes</td>
<td>Hommes</td>
<td>Femmes</td>
<td>Hommes</td>
</tr>
<tr>
<td>35-44 (n = 1609)</td>
<td>22,0</td>
<td>2,5</td>
<td>42,0</td>
<td>2,3</td>
</tr>
<tr>
<td>45-54 (n = 962)</td>
<td>33,0</td>
<td>2,3</td>
<td>36,0</td>
<td>2,3</td>
</tr>
<tr>
<td>55-64 (n = 447)</td>
<td>34,0</td>
<td>1,5</td>
<td>25,0</td>
<td>2,5</td>
</tr>
<tr>
<td>≥ 65 (n = 225)</td>
<td>47,0</td>
<td>0,0</td>
<td>17,0</td>
<td>0,0</td>
</tr>
<tr>
<td>Total (n = 3243)</td>
<td>30,0</td>
<td>2,2</td>
<td>36,0</td>
<td>2,2</td>
</tr>
</tbody>
</table>

**Discussion**

Les résultats de l’estimation de la FALT montrent qu’au Maroc, plus de 3000 cas de cancer du poumon pourraient être évités chez les hommes. Il s’agit du gain maximal potentiel d’une campagne de lutte contre la consommation de tabac, à savoir la diminution de 87 % des cas de cancer du poumon. À notre connaissance, il n’existe pas de données concernant la FALT dans les autres pays du Maghreb, ni au Moyen-Orient. Cette proportion est logiquement proche des autres estimations existantes, notamment en Europe où la FA était de 82 % (29), ou dans le monde où la FALT est d’environ 85 % (676 000 cas de cancer du poumon chez les hommes sont attribuables au tabac) (2).

Cette FA chez les femmes au Maroc est 3,5 fois moins importante que chez les hommes (FA estimée à 25 % chez les femmes). Ceci pourrait être attribué au fait que le tabagisme au Maroc reste à prédominance masculine (31,5 % chez les hommes et 3,1 % chez les femmes) (11). Aussi, pour les femmes au Maroc, la prévalence du tabagisme comme l’incidence des cancers du poumon sont encore faibles (24,25). Ainsi, le nombre de cas évitables est très faible. Si une stabilité de prévalence du tabagisme dans la population marocaine a été observée entre 2000 et 2006, avec 17,2 % et 18,5 % respectivement (11), les hypothèses que nous avons faites montrent qu’environ 529 cas de cancer du poumon chez les femmes seraient liés au tabac en 2025 en l’absence de toute stratégie de prévention du tabagisme dans cette population.

Enfin, notre travail a montré qu’une baisse de 10 % de la prévalence du tabagisme par des actions de prévention peut conduire à une baisse de la FALT d’environ 1 % (précisément 0,7 %) et que les actions de prévention permettant cette baisse se traduisaient par la diminution de plus de 300 cas de cancer du poumon (346 exactement). Ainsi, nous avons estimé la FALT dans la population totale à partir de la formule de Levin (20) qui est la plus fréquemment utilisée (14,29), portant sur l’exposition de la...
population et ne tenant pas compte des facteurs potentiels de confusion. Mais l’estimation exacte de la FA des cancers du poumon liés au tabac est potentiellement plus complexe, surtout si la méthodologie n’a pas écarté ou pris en compte certaines sources d’erreur (30).

Parmi les limites d’utilisation, il faut souligner l’importance de connaître les distributions d’autres facteurs, notamment l’exposition à l’asbestose, mais aussi d’autres habitudes toxiques (consommation de haschich, narguilé, etc.), qui peuvent être différentes selon l’exposition au tabac (31). Ces cas n’ont pas été étudiés faute de données disponibles sur l’exposition simultanée à ces facteurs de risque au Maroc. Des études supplémentaires pourraient permettre de proposer des estimations. Par ailleurs, notre démarche ne prend pas en compte le tabagisme passif qui est associé au cancer du poumon liée au tabac par tranche d’âge chez l’adulte. Bien que ce logiciel utilise une des méthodes présentées d’estimation de la FALT avec le logiciel SAMMEC, qui utilise principalement les estimations du RR de mortalité lié au tabac par tranche d’âge chez l’adulte.

Il convient de noter deux autres limites liées aux données utilisées dans l’une des méthodes présentées d’estimation de la FALT avec le logiciel SAMMEC. La première concerne la comparaison par rapport à la quantité, la durée et les produits de tabagisme consommés. De plus, il faut souligner que le logiciel ne dispose pas de mesures de fréquence et d’association pour les adultes âgés de moins de 35 ans, sachant que le tabagisme est actuellement plus élevé chez les jeunes au Maroc (11). Malgré ses limites, cette première estimation de la FA du cancer du poumon liée au tabac au Maroc a confirmé la nécessité de continuer à lutter contre le tabagisme et l’importance de la mise en place d’un programme de lutte contre le tabagisme au Maroc.

**Tableau 3** Evolution de la fraction attribuable (FA) du cancer du poumon liée au tabac chez les femmes marocaines de 2000 à 2035

<table>
<thead>
<tr>
<th>Année</th>
<th>Estimation de la prévalence du tabac (%)</th>
<th>RR (β)</th>
<th>FA (%)</th>
<th>Nombre estimé de cas de cancer</th>
<th>Nombre de cas évitables</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>0,7 (11)</td>
<td>11,9</td>
<td>-</td>
<td>291 (23)</td>
<td>73</td>
</tr>
<tr>
<td>2006</td>
<td>3,1 (11)</td>
<td>11,9</td>
<td>25</td>
<td>431 (24)</td>
<td>185</td>
</tr>
<tr>
<td>2012</td>
<td>71 (21)</td>
<td>11,9</td>
<td>43</td>
<td>529 (24)</td>
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<td>2025</td>
<td>28,0 (27)</td>
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*RR = risque relatif.*

La présente recherche souligne l’importance de l’urgence des actions à entreprendre : aider les fumeurs à arrêter de fumer et empêcher de nouvelles personnes exposées, notamment les femmes et les adolescents, d’entrer dans le tabagisme. Ces actions sont inscrites dans la Convention-cadre pour la lutte antitabac (CCLAT) et dans le programme de suivi MPOWER de l’OMS, qui engagent tous les pays ayant ratifié ce traité à se mobiliser fermement et par tous les moyens en vue de contrôler le tabagisme (34). Le Maroc a rejoint les pays signataires le 16 avril 2004 mais il n’a pas encore ratifié ce traité. Le seul dispositif juridique de lutte antitabac existant à ce jour au Maroc est le **Dahir n°1-91-112** du 26 juin 1995 portant promulgation de la loi n°15-91 relative à l’interdiction de fumer et de faire de la publicité et de la propagande en faveur du tabac dans certains lieux. Plusieurs initiatives nationales de lutte antitabac ont été mises en œuvre, notamment celles inscrites dans la stratégie sectorielle 2012-2016 du Ministère de la Santé (35), avec comme actions de lutte antitabac « des hôpitaux sans tabac », « Collèges et Lycées Sans Tabac » et « Etablissements Supérieurs Sans Tabac ».

**Conclusion**

Notre étude présente d’importants éléments additionnels pour faire davantage de plaidoyer auprès des décideurs politiques afin de mettre en place une stratégie de lutte antitabac basée sur une politique de prévention.
plus adaptée à cette situation épidémiologique et à même d’épargner un énorme fardeau au pays, par :

- la ratification effective de la Convention-cadre pour la lutte antitabac ;
- l’intégration de la lutte antitabac dans les programmes de santé relatifs aux maladies qui sont liées au tabagisme ;
- la communication et la sensibilisation à large échelle concernant l’aide au sevrage tabagique ;
- l’implication de tous les secteurs concernés dans la lutte antitabac.

Conflit d’intérêt : aucun.

Références


Molecular detection of *Leishmania* spp. isolated from cutaneous lesions of patients referred to Herat regional hospital, Afghanistan

S.H. Mosawi and A. Dalimi

ABSTRACT Cutaneous leishmaniasis is one of the main public health problems in Afghanistan, particularly in Herat. To identify *Leishmania* spp., molecular techniques were applied to samples from 64 cutaneous leishmaniasis patients referred to Herat regional hospital during 2013. Polymerase chain reaction (PCR)–restriction fragment length polymorphism (RFLP) analysis of the ribosomal RNA gene internal transcribed spacer-1 (ITS1) was used. Most of the patients demonstrated dry type single lesions on the head. The results of direct microscopy detection using Giemsa-stained skin scrapings were compared with that of ITS PCR–RFLP for the diagnosis of cutaneous leishmaniasis. Light microscopy examination showed 37/64 positive cases (58%). PCR revealed 50 positive cases (78%), from which ITS PCR–RFLP identified 48 cases (96%) as *L. tropica* and 2 cases (4%) as *L. major*. Cutaneous leishmaniasis in Herat appears to be endemic and of the clinically dry type, caused mainly by *L. tropica* and occasionally by *L. major*.
Introduction

Leishmaniasis threatens 350 million people in 98 countries, with a global estimated incidence of 2 million cases per annum. There are 3 major manifestations of this parasitic disease: cutaneous, mucocutaneous and visceral (1,2). In Afghanistan, cutaneous leishmaniasis is one of the main public health problems. While the estimated annual incidence of cutaneous leishmaniasis in Afghanistan ranges from 113 100 to 226 200 cases, the number of reported cases of cutaneous leishmaniasis are only 22 620 annually (3).

Each Leishmania sp. has a unique epidemiological profile and therefore identification of Leishmania spp. in different regions is indispensable. Conventional methods such as microscopy and culture of amastigotes are not utilized for Leishmania spp. identification as they have an unsatisfactory level of sensitivity. Instead, DNA-based methods, such as the polymerase chain reaction—restriction fragment length polymorphism (PCR–RFLP) analysis of the internal transcribed spacer-1 (ITS1) region of the ribosomal RNA gene (rRNA), are increasingly used for identification worldwide (4–6). DNA cards such as FTA® and KBC® are immediate, affordable, safe and portable tools for collection, banking and transportation of leishmaniasis samples at room temperature prior to DNA extraction, in order to carry out ecological and epidemiological studies in Afghanistan (7–9).

There is a scarcity of comprehensive data about the epidemiology of this neglected disease in Afghanistan, although there has been recent important work by Reithinger et al. (10–16). This follows earlier studies of disease foci by Eliseev and Kellina in 1962 (17) and on the epidemiology of cutaneous leishmaniasis throughout the country by Nadim et al. in the 1970s (17–20). Later, Reyburn et al. carried out a cross-sectional study of a prolonged epidemic of anthroponotic cutaneous leishmaniasis during 1997–98 in Kabul (21). More recently, Faulde et al made a molecular study of cutaneous leishmaniasis in northern parts of Afghanistan (22). Rowland et al. reported an outbreak of cutaneous leishmaniasis in an Afghan refugee camp in north-west Pakistan (23). Plourde et al. studied genetic polymorphisms and drug susceptibility of 4 isolates of Leishmania tropica acquired from Canadian soldiers returning from Afghanistan (24).

Cutaneous leishmaniasis is endemic in Herat in the west of Afghanistan and represents one of the independent foci of the disease (3). While Ahrari and Yamin had made a 9-month demographic analysis of cutaneous leishmaniasis patients referred to Herat regional hospital (25), there is a lack of molecular data about the epidemiology of cutaneous leishmaniasis in Herat. The main aim of the present study therefore was to use molecular methods to identify Leishmania spp. isolated from cutaneous samples of patients referred to Herat regional hospital.

Methods

Study design and setting

This descriptive study was performed in Herat, a city situated in the west of Afghanistan at an altitude of 930 m above sea level. According to previous studies carried out in Herat, most cutaneous leishmaniasis cases are known to occur in early spring (March and April) and early fall (September and October) (25). So the study was designed to cover these periods during 2013.

Sampling

Samples were taken from 64 patients (41 males and 23 females) with clinically diagnosed cutaneous leishmaniasis who were referred to the dermatology section of the Herat regional hospital for confirmation of diagnosis (by microscopic analysis) and treatment (with pentavalent antimony).

Data collection

A questionnaire was completed which included questions about patients’ demographic information and the characteristics of the lesions, and then photos of the lesions were taken and kept for future reference. Treatment was free of charge for the patients so we categorized patients’ income as low if they said they would not come to hospital if treatment was not free, as intermediate if they might come to hospital if treatment was not free, and high if they would come to hospital even if treatment was not free.

Patients had not received any treatment before sample collection. Slash skin smears from the margin of lesions were also taken on DNA banking cards (for molecular analysis) and slides (for microscopic analysis).

Microscopic analysis

The slides were stained by Giemsa staining, then scanned for existing amastigotes using x100 oil-immersion light microscopy.

Molecular analysis (PCR–RFLP)

Disks (2 mm in diameter) were punched out from each DNA and washed 3 times with KBC DNA banking card purification buffer and twice with distilled water. The disks were air dried and put directly through PCR processing.

PCR was performed on the ITS1 region of the rRNA gene as described previously by Schönian et al. (26). Initial denaturation at 95 °C for 5 min was followed by 35 cycles (95 °C for 30 s, 55 °C for 30 s and 72 °C for 45 s) and final extension for 6 min at 72 °C. Amplicons were detected in a 1% agarose gel holding 0.2 mg/mL ethidium bromide. Hae III was the restriction enzyme used. The PCR-RFLP products were detected in 4% agarose gel.

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The PCR product of each sample and primers were sequenced by the ABI3730XL sequence analyser (Macrogen, Korea). After editing and aligning of sequences using the ClustalW program (http://www.ebi.ac.uk/Tools/msa/clustalw2/), the sequences were compared with reference sequences from GenBank. For L. major and L. tropica ITS1 sequences, the phylogenetic tree was created with the neighbour-joining algorithm using Molecular Evolutionary Genetics Analysis (MEGA) software, version 6.0, including sequences of prototypical L. major and L. tropica isolates from GenBank.

**Geographical mapping**

The geographical locations of cases according to species of *Leishmania* were located using the Google Earth software. The topography of Herat was isolated from the whole topography of Afghanistan using ArcGIS geographic information system software and saved in separate files. The marginal lines contained within geomaps of Herat were indexed in the same folder. The geographical locations of cases of *L. major* and *L. tropica* were established on the final map using longitude and latitude techniques.

**Results**

**Demographic characteristics**

Out of 64 patients who were sampled for this study 41 were male (64%) and 23 female (36%). Although the patients’ ages ranged from 1 to 85 years, the majority of patients (67%) were aged 1–20 years. According to patients’ occupation high proportion were students (45%), and the rest were manual workers (17%), housewives (14%), children below school age (14%) or in other employment (9.5%). The patients were classified into 3 income categories, based on their ability to afford their drugs: low (56%), intermediate (33%) or high (11%) (Table 1).

**Clinical profile**

Of the total patients 61% had a single lesion, 19% had 2 lesions and 20% had more than 2 lesions. The size of lesions varied from 0.5 to 10 cm. A majority of cutaneous leishmaniasis lesions were on the head (41%) or hand (36%), and the rest were on the foot (8%) or a combination of 2 or more sites (15%). The majority of patients (88%) presented with dry type lesions (Table 1).

**Identification and mapping of *Leishmania* spp.**

Among the 64 slides examined for amastigotes using light microscopy, 37 (58%) were found positive and 27 (42%) negative.

The PCR technique identified 50 positive cases out of these 64 cutaneous leishmaniasis cases (78%). Amplified fragments of the ITS1 region of the rRNA gene on gel electrophoresis...
are shown in Figure 1, lane 4. Of these PCR-positive cases, RFLP identified 48 cases (96%) as *L. tropica* and 2 cases (4%) as *L. major* (Figures 1 and 2).

The phylogenetic relationships of *Leishmania* genotypes from Herat province were compared with other species in GenBank using the neighbour-joining algorithm (Figure 3). The sequences obtained were annotated in GenBank by accession numbers from KJ420582 to KJ420587.

The geographical distribution of cutaneous leishmaniasis cases in Herat, by species, is presented in Figure 4. The great majority of cases clustered in Injil district of Herat, with 2 cases in Zinda-jan and 1 case in Adraskan.

**Discussion**

There are many studies concerning the identification of *Leishmania* spp. throughout the world, especially in the Middle East and Central Asia (3). The current study was a preliminary molecular report on cutaneous leishmaniasis in Herat province. All patients were local residents of Herat. Our results revealed that anthroponotic cutaneous leishmaniasis due to *L. tropica* was the dominant form of leishmaniasis in Herat (48/50 PCR-positive cases), although we cannot ignore the presence of zoonotic cutaneous leishmaniasis due to *L. major* (2/50 cases).

Research in the Islamic Republic of Iran, which shares a border with Afghanistan, indicated that *L. major* was the dominant species of *Leishmania* (27–31), except in Mashhad province, which is located near Herat in Afghanistan, where the larger portion of *Leishmania* cases belongs to *L. tropica* (27). A study in Turkey showed that *L. tropica* was the only existing species of *Leishmania* in Sanliurfa province (32). A recent study also revealed that *L. tropica* was the causative agent of leishmaniasis in humans in most parts of Turkey (33). A study on leishmaniasis in Yemen

Figure 1 Polymerase chain reaction restriction–fragment length polymorphism (PCR–RFLP) analysis of the internal transcribed spacer-1 (ITS-1) region of the ribosomal RNA gene on gel electrophoresis, using the Hae III restriction enzyme. Lanes 1–3: samples recognized as *Leishmania tropica*; lane 4: amplified fragments of ITS1 region of rRNA gene. Left M: 50 bp marker; right M: 100 bp marker.

Figure 2 Polymerase chain reaction restriction–fragment length polymorphism (PCR–RFLP) analysis of the internal transcribed spacer-1 (ITS-1) region of the ribosomal RNA gene on gel electrophoresis, using the Hae III restriction enzyme. Lane 1: 100 bp marker, lanes 3-6: samples recognized as *Leishmania tropica*; lanes 2 and 7: samples recognized as *L. major*. Lane 8: 50 bp marker.

Figure 3 Phylogenetic relationships of *Leishmania* genotypes of the internal transcribed spacer-1 (ITS-1) region of the ribosomal RNA gene of the collected samples from Herat, Afghanistan (accession numbers KJ420582–KJ420587), compared with other species in GenBank by the neighbour-joining algorithm.
revealed that *L. tropica* was the paramount species of *Leishmania*, although *L. infantum* and *L. donovani* were also identified (34). Most studies in Pakistan indicated that *L. major* was the major species of *Leishmania* in lowland areas, while *L. tropica* dominated in highland areas located near Afghanistan (22).

Many studies have indicated the existence of *L. major* either in Central Asia or northern parts of Afghanistan. Faulde et al. in 2007 reported that zoonotic cutaneous leishmaniasis caused by *L. major* was endemic in Balkh province, north of Afghanistan (35). They found that of 3958 cases, 3782 (95.5%) were zoonotic and thus concluded that *L. major* was the principal species of *Leishmania* in Balkh. In another study, the same authors found an aggressive strain of *L. major* in Uzbekistan (36). Moreover, according to Larreché et al. some virulent strains of *L. major* occur in various areas of Central Asia, especially in Turkmenistan (37).

We found that 64% of patients were male, 67% were aged under 20 years and 56% were of low income. The most common pattern of lesions was 1 lesion (61%), of dry type (88%) and situated on the head (41%). Another study conducted by Ahrari and Yamin also in Herat regional hospital produced findings roughly in line with our data (25); 48% of patients were male, a majority were under 20 years old and 83% were of middle or lower socioeconomic class. They also found that 43% of lesions were located on the head and 60% of the patients had a single lesion. As in our study, most of their patients were resident in Injil district (25). It should be noted, however, that Injil is the nearest district to Herat hospital and it is likely that districts further from the hospital are equally affected by leishmaniasis but that patients could not afford to come to the hospital and therefore were not included in the study.

Myint et al. in their research in Pakistan reported that among 69 cutaneous leishmaniasis cases, 45 (65%) were males. Furthermore, 44 (64%) of the patients were under 20 years old, of whom 42 (61%) suffered from wet lesions and 46% had single lesions (22).

Their findings about the age and sex distribution of patients roughly correspond to our data. However, we found that 88% of patients had dry lesions and 61% had only a single lesion. Rassi et al. in a study in Qom, Islamic Republic of Iran, found that 46.7% of patients were males and 75.0% were aged 15 years and above. Their results about lesions showed that 64.4% of patients suffered from 1 lesion and 48.0% of the lesions occurred on the hands (31). Kato et al. in Venezuela found that 55% of the patients were under 20 years old, of whom 61% were males and 39% females (8). Their results were relatively in line with our data. Khatri et al. did similar research in Yemen. His patients comprised 66% males and 34% females and they showed that 65% of the patients possessed single lesions and a majority of the lesion were of the dry type, 1 to < 2 cm in size and located on the head (34). Their findings also correspond to our data.

In conclusion, our results reveal that *L. tropica* was more prevalent than *L. major* in Herat province of Afghanistan. Hence, the major strategies for prevention of cutaneous leishmaniasis should be directed towards treatment of infected individuals, due to the anthropo-otic nature of transmission of *L. tropica*. However, we should not overlook the presence of *L. major* in Herat province which points to zoonotic reservoirs of the disease. The existence of both *L. tropica* and *L. major* in Afghanistan calls for serious prevention strategies, treatment and vaccination. The lack of modern, sensitive equipment for diagnosis and of effective health care facilities is problematic for physicians and patients.

**Acknowledgements**

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Health Sciences, Professor Yamin, head of the dermatology section of Herat regional hospital, Dr Nadeem, manager of Herat provincial malaria and Leishmaniasis control programme, and all the personnel of Tarbiat Modares University, especially Dr Saeed Dayer, Dr Majid Prestani, Dr Fatemeh Ghafarifar and Dr Javid Sadraei for their kind support.

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Competing interests: None declared.

References


ABSTRACT This study aimed to assess the impact of the Baby-Friendly Hospital Initiative on WHO-defined breastfeeding indicators in Shaqlawa district in Kurdistan region of Iraq. A household survey was carried out on a purposive non-probability sample of 200 mothers with a child aged < 30 months. Mothers were interviewed using a structured form to determine demographic data and feeding practices of the most recent child. The rate of early initiation of breastfeeding was 38.1%, exclusive breastfeeding was 15.4% and continued breastfeeding was 61.0% and 39.5% at 1 and 2 years of age respectively. A significant relationship was found between delivery at the Baby-Friendly accredited hospital and early initiation of breastfeeding but not with exclusive or continued breastfeeding. While continued breastfeeding at 1 year and 2 year was good, early initiation and exclusive breastfeeding indicators were not at an acceptable level, which indicates an ineffective role for the Baby-Friendly Hospital Initiative.
**Introduction**

Breastfeeding is an unequalled way of providing the ideal food for the healthy growth and development of infants, and is an integral part of the reproductive process with important implications for the health of the mother and child. Breastfeeding offers significant protection against illness for the infant, and numerous health benefits for the mother, including a decreased risk of breast cancer. If every baby were exclusively breastfed from birth to 6 months and breastfeeding were continued for a few months thereafter, an estimated 1.5 million lives would be saved each year (1). Yet barely 1 in 3 infants is exclusively breastfed during the first 6 months of life (2).

In view of the undeniable health benefits that breastfeeding offers to both women and children and the worrisome trends toward the decline in this behaviour, the United Nations Children’s Fund (UNICEF) and World Health Organization (WHO) launched the Baby-Friendly Hospital Initiative (BFHI) in 1991, which aimed to increase rates of breastfeeding. “Baby-Friendly” is a designation a maternity site can receive by demonstrating to external assessors’ compliance with the Ten Steps to Successful Breastfeeding (3-4).

On 24 January 2008 Shaqlawa general hospital in Erbil city of Kurdistan region was certified as a Baby-Friendly hospital by the Iraqi Ministry of Health and UNICEF as a preliminary step to promote, protect and support successful breastfeeding in the region. According to the head of the maternal and child health department of the Directorate of General Health in Erbil all Shaqlawa hospital staff initially participated in 3 training courses of 20 hours followed by many strengthening courses (S. Khalid, personal communication, 11 June 2015). Furthermore, this programme has received annual internal assessments by the hospital and frequent external assessments by the health administration of Kurdistan region and in July 2009 by the Iraqi Ministry of Health.

Unfortunately, compliance with breastfeeding recommendations in developing countries is low, and it has been suggested that more attention should be given to increasing breastfeeding rates and to monitoring trends (1-5). The WHO indicators for assessing breastfeeding practices can be used to assess infant feeding within and across countries to evaluate the progress of breastfeeding promotion efforts. These indicators were generated using data from children aged under 24 months. The 3 core indicators and 2 optional indicators for breastfeeding are: early initiation of breastfeeding (proportion of children born in the last 24 months who are put to the breast within 1 hour of birth); exclusive breastfeeding under 6 months (proportion of infants 0-5 months of age who are fed exclusively with breast milk); continued breastfeeding at 1 year (proportion of children 12-15 months of age who are fed breast milk); children ever breastfed (proportion of children born in the last 24 months who were ever breastfed); continued breastfeeding at 2 years (proportion of children 20-23 months of age who are fed breast milk) (1).

It is important to assess these indicators and the various determinants of breastfeeding in order to support successful interventions in the integrated health-care system towards giving the optimal practical support to mothers. To evaluate the impact of the BFHI in Shaqlawa district a study was designed to assess mothers’ breastfeeding practices through calculation of core indicators.

**Methods**

**Study setting**

A household survey was conducted during October 2013. The study was carried out in the urban area of Shaqlawa district in Erbil governorate of the Kurdistan region of Iraq. The district of Shaqlawa lies 50 km north of Erbil city.

**Sample**

The sample size was determined according to the formula for margin of error: \( n = \left( \frac{z_{\alpha/2} \sigma}{E} \right)^2 \), where \( z_{\alpha/2} \) is the critical value, \( \sigma \) is the standard deviation and \( E \) is the margin of error. The sampling process was accomplished in 2 stages. In the first stage 8 neighbourhoods were selected randomly according to geographic areas from the list of 18 neighbourhoods of Shaqlawa district. In the second stage the random walk and quota sampling technique was used to select 25 households from each of the 8 neighbourhoods. Each household along the path was screened to ascertain the presence of mothers having a child aged less than 30 months, until the sample size of 200 mother-child pairs was reached (6).

**Tool**

A 2-part structured form for interviewing mothers was developed by the researchers. The first section of the questionnaire collected data on demographic variables (mother’s age and occupation, child’s age and sex); type of delivery (vaginal, caesarean section) and place of delivery (Shaqlawa Baby-Friendly hospital, non-Baby-Friendly hospital, home). The second section assessed mothers’ infant feeding practices, based on WHO breastfeeding indicators (including items about early initiation, exclusivity and duration of breastfeeding). The reliability of the questionnaire was determined via test–retest reliability. The Pearson correlation coefficient for reliability was good (\( r = 0.8 \)).

WHO definitions of breastfeeding indicators were used: early initiation of breastfeeding (proportion of children born in the last 24 months who were put to the breast within 1 hour of birth); exclusive breastfeeding under 6 months (proportion of infants 0-5 months of age who are fed breast milk).
age who are fed exclusively with breast milk); continuing breastfeeding at the first year (proportion of children 12–15 months of age who are fed breast milk); continued breastfeeding rate over 2 years (proportion of children 20–23 months of age who are breastfeeding); and children ever breastfed (proportion of children born in the last 24 months who were ever breastfed) (7).

Data collection
Before data collection ethical approval was obtained from the ethics committee at College of Nursing, Hawler Medical University. Each mother’s oral agreement for participation in the study was obtained after an explanation of the purpose of the study and guarantees of confidentiality and anonymity by the researchers. Data were collected using face-to-face interviews with mothers in their households. Three Kurdish-speaking researchers participated in the data collection which took 6 days.

Data processing and analysis
Data entry, processing and statistical analysis were carried out using SPSS, version 18. For demographic characteristics, frequency tables were carried out. Breastfeeding indicators were calculated according to equations established by WHO (1), and chi-squared for tests of significance were used to compare different groups and analyse the association between place of delivery and breastfeeding indicators. A $P$-value ≤ 0.05 was considered as statistically significant.

Results
Sample profile
From the urban area of Shaqlawa district 202 households were initially recruited for data collection and only 2 mothers refused participation in the study. Table 1 shows the demographic and birth data of the 200 mothers who participated. The mean and standard deviation (SD) age of mothers was 28.7 (SD 5.1) years. Their mean years of formal education were 5.7 (SD 4.3) and 76.5% of mothers were unemployed. A great majority of mothers (82.0%) gave birth to their most recent baby by normal vaginal delivery. Concerning the demographic characteristics of the studied children 52.5% were males (Table 1), their mean age was 11.9 (SD 7.9) months and 24.0% were aged 18–23.9 months old (Figure 1).

Breastfeeding indicators
The study found that among all the mothers the rate of early initiation of breastfeeding was 38.1% and of exclusive breastfeeding was 15.4%. The rates of continued breastfeeding of infants

<table>
<thead>
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<th>Table 1 Demographic information of the studied mother–child pairs ($n = 200$)</th>
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<td>Unemployed</td>
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<td><strong>Child’s sex</strong></td>
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<td>Female</td>
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<tr>
<td><strong>Type of delivery</strong></td>
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<td>Normal vaginal delivery</td>
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<td>Home</td>
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<tr>
<td>Non-Baby-Friendly hospital</td>
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<td>Shaqlawa Baby-Friendly hospital</td>
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Figure 1 Distribution of the studied children by age ($n = 200$)
at 1 and 2 years of age were 61.0% and 39.5% respectively. The rate of ever breastfeeding their most recent child was 98.0% and of never breastfeeding the child was 2.0% (Table 2).

**Breastfeeding indicators by type of hospital**

A total of 137 (68.5%) of the mothers delivered their most recent child in Shaqlawa Baby-Friendly hospital and 56 (28.0%) in non-Baby-Friendly hospitals, while 7 (3.5%) mothers delivered at home (Table 1). When we analysed the breastfeeding indicators by type of hospital the results showed a highly significant relationship between place of delivery and the early initiation of breastfeeding but not with exclusive or continued breastfeeding (Table 3). Of the mothers who had delivered their child in Shaqlawa Baby-Friendly hospital 44.5% had initiated breastfeeding early during the first hour after delivery compared with only 17.9% of mothers who delivered in non-Baby-Friendly hospitals and 42.9% who delivered at home (P = 0.007). In contrast, 11.4% of infants delivered in Shaqlawa hospital (0–5.9 months of age) were on exclusive breastfeeding during the first 6 months of the infant’s life compared with 25.0% delivered at non-Baby-Friendly hospitals (P = 0.363). The rate of continued breastfeeding was 53.3% of children delivered in Shaqlawa hospital and 50.0% delivered in non-Baby-Friendly hospitals (P = 0.296).

**Breastfeeding information to mothers at Shaqlawa hospital**

The results showed that 59.9% of mothers who delivered their children in Shaqlawa hospital received breastfeeding information during pregnancy in the primary health-care centre, 68.0% received breastfeeding information in the hospital after delivering the baby and 67.2% of them received breastfeeding information when visiting the primary health-care centre for newborn vaccination (Table 4). The researchers also found that there was no mothers’ support groups in this hospital and the mothers had not received any gifts from formula milk companies.

**Discussion**

The Ministry of Health in the Iraqi Kurdistan region has adopted a policy in line with WHO/UNICEF for protection, promotion and support of breastfeeding. Shaqlawa district was selected for the application of this policy and the current study was carried out to determine the breastfeeding indicators of mothers in Shaqlawa. The study was well-received by households, and mothers were eager to participate. Step 4 of the WHO/UNICEF Ten Steps to Successful Breastfeeding recommends early initiation of breastfeeding. The BFHI assessment tool suggests that the baby should be placed “skin-to-skin” with the mother within the first half hour following delivery. In the current study, the rate of early initiation of breastfeeding was fair (38.1%), comparable with the WHO rating (6). It is in agreement with the findings of a multiple indicator cluster survey in 2006 that indicated that only 31% of mothers in Iraq started breastfeeding within the first hour of birth (7). Another study in Erbil city showed that 24.3% of mothers were early initiators of breastfeeding (8). In contrast, early initiation of breastfeeding among Saudi Arabian mothers in 2008 was very high (95%) (9).

Exclusive breastfeeding in the early months of life is correlated strongly with increased infant survival and lowered risk of illness, particularly gastritis (10). In the current study the rate of exclusive breastfeeding at 0–< 6 months was poor (15.4%), which is comparable to the WHO rating (6). It is consistent with the multiple indicator cluster survey findings in 2011 but is higher than the exclusive breastfeeding rate in the earlier study in Erbil city (8.3% of mothers) (8).

Although a high percentage of mothers in our survey received prenatal and postnatal education about breastfeeding, the rate of exclusive breastfeeding is not satisfactory. A Scottish study found that babies born in BFHI-accredited hospitals were 28% more likely to be exclusively breastfed at 7 days postpartum (11). In another randomized trial in Belarus, maternity hospitals were randomized to receive an intervention modelled on the BFHI or to continue with usual infant feeding...
practices and policies. The study found an increase in the duration and exclusivity of breastfeeding associated with BFHI hospitals, as well as a decreased incidence of gastrointestinal disease and atopic eczema during the first year of life (12).

The Innocent Declaration adopted by participants at the WHO/UNICEF Policy Makers Meeting on Breastfeeding in the early 1990s recommended that babies continue to be breastfed for up to 2 years of age or beyond. When provided along with appropriate and adequate complementary food, breast milk continues to be an important source of nutrition and fluids and immunological protection for the child after 6 months of age. The continued bonding between mother and child provided by breastfeeding encourages optimal psychosocial development (6).

The current study in Erbil district found that the rate of continuing breastfeeding in year 1 by all the mothers in the sample was 61.0%. This is much lower than in the study from Oman, in which 95% of mothers continued breastfeeding their infants at the age of 1 year (13), and in another study from Erbil city (70.1%) (10). The rate of continued breastfeeding at 2 years in our study was 39.5% and this is slightly higher than what was previously found in Erbil city (33.3%) (10). It is much lower, however, than the rate reported from studies conducted in Qatar (45.4%) (5) and in the Islamic Republic of Iran (57%) (14).

The proportion of children ever breastfed, as an optional indicator, was 98.0%, indicating that most mothers in Shaqlawa district practised breastfeeding at some time before the child was 2 years of age, even if not for sufficiently long periods. This figure is consistent with results reported at the national level in Qatar (97.9%) (5) and Egypt (95.8%) (13).

The setting in which a woman gives birth can have an impact on her breastfeeding outcomes. The current study found that early initiation of breastfeeding was significantly associated with place of delivery (44.5% in Shaqlawa Baby-Friendly accredited hospital versus only 17.9% in non-Baby-Friendly hospitals). This finding is consistent with a retrospective cohort study in the United States of America which explored the impact of variations in practice at different hospitals as a component of breastfeeding outcomes (15,16). In contrast, our study found no significant association between place of delivery and exclusive or continued breastfeeding indicators. We interpret this to ineffective

| Table 3 Correlation between place of delivery and breastfeeding indicators |
|-------------------------------------------|-----------------|-----------------|----------------|----------------|
| Breastfeeding indicator                  | Home            | Non-Baby-Friendly hospital | Shaqlawa Baby-Friendly hospital |
|                                         | No. %           | No. %            | No. %          | P-value        |
| Early initiation of breastfeeding        |                 |                  |                |                |
| No                                       | 4 57.1          | 45 80.4          | 73 53.3        | 7.285 0.007   |
| Yes                                      | 3 42.9          | 10 17.9          | 61 44.5        |                |
| Never breastfed                          | 0 0.0           | 1 1.8            | 3 2.2          |                |
| Exclusive breastfeeding (0–5.9 months)   |                 |                  |                |                |
| No                                       | 1 0.5           | 12 75.0          | 31 88.6        | 0.829 0.363   |
| Yes                                      | 0 0.0           | 4 25.0           | 4 11.4         |                |
| Continued on breastfeeding               |                 |                  |                |                |
| No                                       | 5 71.4          | 28 50.0          | 64 46.7        | -0.074 0.296  |
| Yes                                      | 2 28.6          | 28 50.0          | 73 53.3        |                |

| Table 4 Receipt of information about breastfeeding during antenatal and postnatal care by mothers who delivered at Shaqlawa Baby-Friendly hospital (n = 137) |
|-------------------------------------------------------------------------------------------------------------|-----------------|----------------|
| Breastfeeding information                                                                                   | Yes             | No             |
| Mother received information on breastfeeding during pregnancy in primary health-care centre                  | 82 59.9         | 55 40.1        |
| Mother received information on initiation and exclusive breastfeeding after delivering baby in Shaqlawa hospital | 93 67.9         | 44 32.1        |
| Mother received information on breastfeeding when visiting primary health-care centre for newborn vaccination | 92 67.2         | 45 32.8        |
breastfeeding education by health workers in Baby-Friendly hospitals and to a lack of follow-up of mothers at home for continuation of breastfeeding. Although there is an internal assessment annually among Shaqalawa hospital staff, the present adverse conditions in the Kurdistan region of Iraq mean that since 2014 not all the criteria are being met. Limited financial support and the heavy workload on health professionals due to the large number of refugees from the Syrian Arab Republic and other parts of Iraq who need urgent health care is likely to have a negative influence on breastfeeding indicators.

The findings of the current study are subject to certain limitations. The data were dependent on mothers’ 24-hour recall, which can give a false picture of breastfeeding practices as these may change daily. However, this is the approach adopted by the WHO as the standard for assessment of breastfeeding indicators.

**Conclusion and Recommendations**

The current steps in BFHI designations used by the Ministry of Health in the Iraqi Kurdistan region need verification to reach the necessary standards to attain the global criteria for Baby-Friendly hospitals. We recommend that the current process of Baby-Friendly in Shaqalawa hospital needs revitalization and improvement to follow the Ten Steps of Successful Breastfeeding and the programme should be extended by the Ministry of Health in the Iraqi Kurdistan region. Further studies are needed to understand the obstacles to choosing early initiation and exclusive breastfeeding by mothers.

**Funding:** None.

**Competing interests:** None declared.

**References**


Validation of the General Self-Efficacy Scale among Qatari young women

A. Crandall,1 H.F. Abdul Rahim2 and K.M. Yount3

Abstract

The General Self-Efficacy Scale (GSES) is a measure of people’s beliefs about their capacity to cope with life’s demands. Self-efficacy may be particularly relevant in transitional stages such as in late adolescence, when young people make decisions that will impact their adult lives. In the present study, we aimed to validate an Arabic version of GSES among 355 Qatari young women aged 18+ years and finishing their final year of high school. We conducted exploratory and confirmatory factor analyses to assess the scale dimensionality. The final model fit was adequate (root mean square error of approximation = 0.07, comparative fit index = 1.00, Tucker–Lewis index = 0.99), confirming a unidimensional self-efficacy measure. The Qatari Standard Arabic GSES is a reliable tool for measuring general self-efficacy among young Qatari women.

Validation de l’Échelle d’efficacité personnelle générale auprès de jeunes femmes qataries

RÉSUMÉ L’Échelle d’efficacité personnelle générale mesure la conviction des personnes à avoir la capacité de faire face aux aléas de la vie. Le sentiment d’efficacité personnelle peut être particulièrement pertinent lors de phases de transition telles que la fin de l’adolescence, lorsque les jeunes gens prennent des décisions qui affecteront leur vie d’adulte. Dans la présente étude, nous avons pour objectif la validation d’une version en langue arabe de l’échelle auprès de 355 jeunes femmes qataries âgées de 18 ans ou plus et en dernière année de secondaire. Nous avons mené des analyses factorielles exploratoires et de confirmation pour évaluer les dimensions de l’échelle. L’ajustement du modèle final était approprié (erreur quadratique moyenne de l’approximation = 0.07 ; indice comparatif d’ajustement = 1.00 ; indice de Tucker-Lewis = 0.99) confirmant une mesure unidimensionnelle du sentiment d’efficacité personnelle. L’Échelle d’efficacité personnelle en arabe standard du Qatar est fiable pour mesurer l’efficacité personnelle générale chez des jeunes femmes qataries.

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Introduction

Self-efficacy, a core aspect of social-cognitive theory, refers to “people’s beliefs about their capabilities to exercise control over their own level of functioning and over events that affect their lives” (1). These beliefs influence a person’s motivation and may be the most important factors for determining behaviour (2). Self-efficacy is not the objective ability of an individual, rather it captures an individual’s perception of their performance capability (3). Those with high self-efficacy tend to select, create and transform their environmental circumstances more actively than those with lower levels of self-efficacy (4).

Self-efficacy is an under-studied area of research in Qatar and has important implications for young women as they transition into adulthood. Perceived self-efficacy is important in determining aspirations and behaviours such as those for work, schooling and family formation (5). For example, in Qatar, historically women who have been engaged in the labour force have been employed in “feminized” occupations (e.g. clerical jobs or jobs in education and health care) (6). Opportunities to engage in “non-traditional” occupations that have been historically staffed by men (e.g. engineering, technology and leadership positions) have been socially devalued (6,7). However, based on social–cognitive theory, women with high self-efficacy could aspire to and achieve goals for non-traditional occupations, despite barriers that shape the larger environment.

The General Self-Efficacy Scale (GSES) was first developed in 1979 in German by Jerusalem and Schwarzer. The original 20-item scale was reduced to 10 items in 1981 and is now available in 33 languages (5). The scale is designed to assess a person’s optimistic self-beliefs used to cope with life’s demands; it does not assess coping and adaptation for specific behaviours. Self-efficacy is typically referenced in relation to specific tasks, but high self-efficacy on one task is thought to generalize to other tasks (1,8,9).

The GSES has been used in numerous studies and has been validated as a unidimensional construct for adults (including adolescents) in several single- (10) and multi-country studies (8,11–14). An Arabic version of the scale has been validated in the Syrian Arab Republic among individuals aged 12–94 years old (8,12). Metric invariance and partial scalar invariance have been satisfied across countries (13,14).

To our knowledge, the Qatari Standard Arabic version of the GSES has not been validated nor has it been validated specifically with a late adolescent and young adult population. Here, we assessed general self-efficacy among Qatari women in the 12th grade who were at least 18 years old. We hypothesized that the scale would be unidimensional in this population. If the scale were validated it would provide us with the opportunity to look at young women’s self-efficacy as they transition into adulthood.

Methods

Setting

There is increasing recognition in Qatar, a nation of approximately 2 million people (15), that women’s participation in the labour market is necessary to maintain its fast-growing economy. Currently, about 36% of women participate in the labour force, a figure which is low compared with neighbouring countries (6). Although their labour force participation is low, women outnumber men in undergraduate university enrolment by a scale of 3 to 1 (16). However, women disproportionately major in the arts and humanities, majors that are not in alignment with jobs in the fastest growing areas of the Qatari economy: telecommunications, transportation and business (6). Young women’s general self-efficacy may impact their beliefs about their ability to perform in jobs that men historically have staffed, and thus it may play a strong role in young women’s choice of occupation. The validation of the GSES among young women in Qatar is necessary in order to test in subsequent studies the relationship between young women’s self-efficacy and their aspirations for education, work and marriage.

Sample

The participants were 369 female, Qatari students in the 12th grade of secondary school, ranging in age from 18–23 years. The students came from 29 schools throughout Qatar. All eligible women (enrolled in the 12th grade, at least 18 years old and never married) were invited to participate. Data collection was carried out in the schools via computer-assisted self-interview.

Before beginning the survey, the women provided their informed consent. They were told that the purpose of the survey was to learn how parents and other kin influence the participation of young women in the labour force. Respondents were not compensated for completing the survey.

Response rates varied by school, with a total response rate of approximately 59%, based on the available school records for the total number of eligible students. Of the 369 participants, 14 did not respond to the self-efficacy questions; the final sample for this analysis included 355 Qatari young women. The average age of participants was 18.6 years and 79% of respondents’ mothers and 82% of fathers had received at least some schooling.

Measure

The GSES comprises 10 items rated on a scale of 1 (not at all true) to 4 (exactly true) (5). Sample items include: “I can manage to solve difficult problems if I try hard enough” and “If I am in trouble, I can usually think of a solution.” The scale was translated into Qatari Standard Arabic by a professional translator,
and the translation was reviewed by 2 researchers.

Data analysis

To test the factor structure of the GSES among young women in Qatar, we conducted exploratory and confirmatory factor analyses with robust weighted least squares estimation using Mplus, version 7.17 (17). We performed the exploratory factor analyses on a random split-half sample (n = 178), running sequential 1–3 factor models. To compare exploratory factor analyses models, we conducted exploratory structural equation modelling and calculated the chi-squared difference test.

We then performed the confirmatory factor analyses on the other random split-half (to provide a subsample independent from the exploratory factor analyses subsample) (18). Adequate model fit was indicated by a comparative fit index (CFI) and Tucker–Lewis index (TLI) > 0.90, a root mean square error of approximation (RMSEA) < 0.08 (19) and theoretical interpretation.

We chose to confirm the 1-factor model (RMSEA = 0.23, CFI = 0.96, TLI = 0.95) for the following reasons. First, we felt that the similarities in semantics among some items resulted in additional factors in the exploratory factor analyses solution that were not substantive latent variables. The factor structure might be better modelled by correlating the error terms on similar items in a 1-factor solution. A limitation of exploratory factor analyses is that correlated errors cannot be specified. Due to this limitation, the source of covariation among items (such as similarly worded indicators or method effects) may manifest as additional factors even though the covariation is not due to substantive latent variables (20). Secondly, factor loadings for each of the 10 items using a 1-factor model were high (> 0.75). Thirdly the eigenvalue for a 1-factor structure was 7.62 while the 2-factor eigenvalue was < 1.00, indicating a 1-factor structure. In confirmatory factor analyses, the model fit was also poor based on the

Table 1 shows the item mean scores for the exploratory factor analyses, confirmatory factor analyses and the full sample. Item mean ranged from 2.69 to 2.98 in the full sample. The internal consistency for the total sample was α = 0.95. All items were left (negatively) skewed and had kurtosis < 3, which is evidence of a light-tail distribution (the skewness and kurtosis results are available on request from the first author).

In the exploratory factor analyses, fit indices for the 1-, 2- and 3-factor models were all adequate based on the CFI and TLI, but poor based on the RMSEA. Chi-squared difference tests were computed to compare the 3-factor and 2-factor models with the 1-factor model. Based on these tests, the 3-factor and 2-factor models fitted the data better than the 1-factor model (chi-squared difference tests for the 3-factor model versus 1-factor model: χ² = 266.58, P < 0.001; for the 2-factor versus 1-factor model: χ² = 186.89, P < 0.001). However, the 2- and 3-factor models were not theoretically meaningful and several items had high cross-loadings (Table 2).

We chose to confirm the 1-factor model (RMSEA = 0.23, CFI = 0.96, TLI = 0.95) for the following reasons. First, we felt that the similarities in semantics among some items resulted in additional factors in the exploratory factor analyses solution that were not substantive latent variables. The factor structure might be better modelled by correlating the error terms on similar items in a 1-factor solution. A limitation of exploratory factor analyses is that correlated errors cannot be specified. Due to this limitation, the source of covariation among items (such as similarly worded indicators or method effects) may manifest as additional factors even though the covariation is not due to substantive latent variables (20). Secondly, factor loadings for each of the 10 items using a 1-factor model were high (> 0.75). Thirdly the eigenvalue for a 1-factor structure was 7.62 while the 2-factor eigenvalue was < 1.00, indicating a 1-factor structure. In confirmatory factor analyses, the model fit was also poor based on the

Table 1  Validation of the Qatari Arabic version of the General Self-Efficacy Scale: means scores for items in the exploratory and confirmatory factor analyses for split-half samples and the full sample of female 12th graders aged 18+ years

<table>
<thead>
<tr>
<th>Items</th>
<th>Exploratory factor analysis</th>
<th>Confirmatory factor analysis</th>
<th>Total sample (n = 355)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. I can manage to solve difficult problems if I try hard enough</td>
<td>2.79 (1.06)</td>
<td>2.71 (1.03)</td>
<td>2.75 (1.05)</td>
</tr>
<tr>
<td>B. If someone opposes me, I can find the means and ways to get what I want</td>
<td>2.69 (1.07)</td>
<td>2.69 (1.04)</td>
<td>2.69 (1.06)</td>
</tr>
<tr>
<td>C. It is easy for me to stick to my aims and accomplish my goals</td>
<td>3.03 (1.07)</td>
<td>2.92 (0.98)</td>
<td>2.97 (1.02)</td>
</tr>
<tr>
<td>D. I am confident that I could deal efficiently with unexpected events</td>
<td>2.98 (1.00)</td>
<td>2.93 (0.98)</td>
<td>2.95 (0.99)</td>
</tr>
<tr>
<td>E. Thanks to my resourcefulness, I know how to handle unforeseen situations</td>
<td>2.89 (0.96)</td>
<td>2.76 (0.98)</td>
<td>2.83 (0.97)</td>
</tr>
<tr>
<td>F. I can solve most problems if I invest the necessary effort</td>
<td>2.89 (0.98)</td>
<td>2.88 (1.01)</td>
<td>2.89 (0.99)</td>
</tr>
<tr>
<td>G. I can remain calm when facing difficulties because I can rely on my coping abilities</td>
<td>2.89 (1.02)</td>
<td>2.80 (1.04)</td>
<td>2.85 (1.03)</td>
</tr>
<tr>
<td>H. When I am confronted with a problem, I can usually find several solutions</td>
<td>2.93 (0.93)</td>
<td>2.86 (1.01)</td>
<td>2.90 (0.97)</td>
</tr>
<tr>
<td>I. If I am in trouble, I can usually think of a solution</td>
<td>3.02 (0.96)</td>
<td>2.93 (1.02)</td>
<td>2.98 (0.99)</td>
</tr>
<tr>
<td>J. I can usually handle whatever comes my way</td>
<td>2.93 (0.89)</td>
<td>2.84 (1.00)</td>
<td>2.88 (0.95)</td>
</tr>
</tbody>
</table>

*Score range: 1–4.
SD = standard deviation.
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Table 2 Validation of the Qatari Arabic version of the General Self-Efficacy Scale: results of 2- and 3-factor models for the subsample of female 12th graders aged 18+ years (n = 178)

<table>
<thead>
<tr>
<th>Variable</th>
<th>2-factor model</th>
<th>3-factor model</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Factor 1</td>
<td>Factor 2</td>
</tr>
<tr>
<td>Items</td>
<td></td>
<td>Factor loadings</td>
</tr>
<tr>
<td>A. I can manage to solve difficult problems if I try hard enough</td>
<td>0.963*</td>
<td>-0.019</td>
</tr>
<tr>
<td>B. If someone opposes me, I can find the means and ways to get what I want</td>
<td>0.834*</td>
<td>0.046</td>
</tr>
<tr>
<td>C. It is easy for me to stick to my aims and accomplish my goals</td>
<td>0.682*</td>
<td>0.320*</td>
</tr>
<tr>
<td>D. I am confident that I could deal efficiently with unexpected events</td>
<td>0.440*</td>
<td>0.553*</td>
</tr>
<tr>
<td>E. Thanks to my resourcefulness, I know how to handle unforeseen situations</td>
<td>0.219*</td>
<td>0.742*</td>
</tr>
<tr>
<td>F. I can solve most problems if I invest the necessary effort</td>
<td>0.155*</td>
<td>0.800*</td>
</tr>
<tr>
<td>G. I can remain calm when facing difficulties because I can rely on my coping abilities</td>
<td>-0.007</td>
<td>0.874*</td>
</tr>
<tr>
<td>H. When I am confronted with a problem, I can usually find several solutions</td>
<td>0.066</td>
<td>0.916*</td>
</tr>
<tr>
<td>I. If I am in trouble, I can usually think of a solution</td>
<td>-0.010</td>
<td>0.932</td>
</tr>
<tr>
<td>J. I can usually handle whatever comes my way</td>
<td>-0.020</td>
<td>0.926*</td>
</tr>
</tbody>
</table>

Correlations

<table>
<thead>
<tr>
<th>Correlation coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor 1 with Factor 2</td>
</tr>
<tr>
<td>Factor 1 with Factor 3</td>
</tr>
<tr>
<td>Factor 2 with Factor 3</td>
</tr>
</tbody>
</table>

Analysis

| RMSEA | 0.164 | 0.135 |
| CFI  | 0.986 | 0.993 |
| TLI  | 0.976 | 0.983 |

*P < 0.05

We next correlated 9 residual error terms on similarly worded items. The first 3 items of the GSES included semantics that focused on the problem-solving aspects of self-efficacy; the last 4 items included semantics relating to the coping aspect of self-efficacy. In the first 3 items (A–C), the semantics focus on an individual’s ability to problem solve due to their determination or effort (item A: “manage to solve” and “try hard enough”; item B: “find means and ways”; item C: “stick to my aims”). The last 4 items (G–J) focus on the respondent’s awareness of their coping abilities or belief that “I can cope with this” (item G: “rely on coping abilities”; item H: “find solutions”; item I: “think of solution”; item J: “handle”). Items D, E, and F are a mix of these 2 aspects of self-efficacy. The correlation of these error terms was based on reviewing the semantics of the items for similarities along with assessing the modification indices generated in Mplus. These modification indices verified our study of item similarity and dissimilarity. Thus, it made substantive sense to correlate the residual error terms of the first 3 items and of the last 4 items (19). The resulting model fit was adequate (RMSEA= 0.07, CFI = 1.00, TLI = 0.99), confirming a unidimensional self-efficacy measure.

Table 3 displays the results of the Geomin-rotated 1-factor exploratory factor analyses model and the 1-factor confirmatory factor analyses model. Factor loadings ranged from 0.79 to 0.95 in the EFA and from 0.69 to 0.97 (with 9 residual error terms on similar items correlated) in the CFA.

Discussion

The current study provides evidence that the Arabic version of the GSES is a reliable tool to measure general
self-efficacy among young Qatari women in secondary school. In line with other studies and our hypothesis, this analysis supports a unidimensional measure of self-efficacy (8,12).

Item mean scores, which ranged from 2.69 to 2.98, were similar to those of other countries in the Eastern Mediterranean Region (8), including the Syrian Arab Republic (2.48 to 3.16) and the Islamic Republic of Iran (2.78 to 3.47), and also those in the United States of America (USA) (2.59 to 3.33). The range in item means in Qatar was narrower, however, perhaps reflecting our more homogenous sample, comprising only women aged 18–23 years who were in their final year of high school. The internal consistency of the scale among Qatari young women (0.95) was comparable, but higher than in other countries where the scale has been validated. For example, in the scale validation that Schwarzer et al. carried out in 14 countries the internal consistency ranged from 0.78 in the Greek version to 0.91 in the Japanese version (12). Item mean scores and the internal consistency of the scale further suggests that self-efficacy is a valid construct among Qatari young women.

Young women’s self-efficacy may influence their choice of career. Assessing the relationship between young women’s self-efficacy and their career aspirations is an important next step to understanding Qatari women’s aspirations for schooling as well as for work. To our knowledge, this question has not been studied previously in Qatar, and few studies have assessed this question internationally. In a study of 123 university students in the USA, researchers assessed the association between young women’s task-specific self-efficacy and their choice of a leadership versus a team-member career (21). Young women with higher self-efficacy were more likely to choose leadership careers over team-member careers than were young women with lower self-efficacy. While task-specific self-efficacy is more likely to predict career choices, general self-efficacy may also be predictive of young women’s perceived career options. Further research that explores this association and that validates a task-specific self-efficacy scale in Qatar is warranted.

One limitation of the current study was that the response rate in the schools was lower than previous school-based studies in Qatar and elsewhere in the region (22,23), although it was comparable to some school-based surveys carried out in the USA (24,25). The survey was conducted near the end of the school year, when students were taking examinations, which may have contributed to response rates lower than in previous surveys. This was a census sample with differential rates of

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**Table 3 Validation of the Qatari Arabic version of the General Self-Efficacy Scale: results of the exploratory factor analyses and confirmatory factor analyses for the subsample of female 12th graders aged 18+ years**

<table>
<thead>
<tr>
<th>Items</th>
<th>Exploratory factor analysis ( n = 178 )</th>
<th>Confirmatory factor analysis ( n = 177 )</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A.</strong> I can manage to solve difficult problems if I try hard enough b</td>
<td>0.833*</td>
<td>0.687*</td>
</tr>
<tr>
<td><strong>B.</strong> If someone opposes me, I can find the means and ways to get what I want b</td>
<td>0.787*</td>
<td>0.716*</td>
</tr>
<tr>
<td><strong>C.</strong> It is easy for me to stick to my aims and accomplish my goals b</td>
<td>0.874*</td>
<td>0.847*</td>
</tr>
<tr>
<td><strong>D.</strong> I am confident that I could deal efficiently with unexpected events</td>
<td>0.898*</td>
<td>0.965*</td>
</tr>
<tr>
<td><strong>E.</strong> Thanks to my resourcefulness, I know how to handle unforeseen situations</td>
<td>0.896*</td>
<td>0.930*</td>
</tr>
<tr>
<td><strong>F.</strong> I can solve most problems if I invest the necessary effort</td>
<td>0.904*</td>
<td>0.949*</td>
</tr>
<tr>
<td><strong>G.</strong> I can remain calm when facing difficulties because I can rely on my coping abilities</td>
<td>0.854*</td>
<td>0.805*</td>
</tr>
<tr>
<td><strong>H.</strong> When I am confronted with a problem, I can usually find several solutions b</td>
<td>0.954*</td>
<td>0.834*</td>
</tr>
<tr>
<td><strong>I.</strong> If I am in trouble, I can usually think of a solution b</td>
<td>0.908*</td>
<td>0.788*</td>
</tr>
<tr>
<td><strong>J.</strong> I can usually handle whatever comes my way b</td>
<td>0.882*</td>
<td>0.766*</td>
</tr>
</tbody>
</table>

**Analysis**

<table>
<thead>
<tr>
<th>Items</th>
<th>Factor loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td>RMSEA</td>
<td>0.231</td>
</tr>
<tr>
<td>CFI</td>
<td>0.962</td>
</tr>
<tr>
<td>TLI</td>
<td>0.952</td>
</tr>
</tbody>
</table>

*P < 0.05.

Results with 9 residual error terms on similar items correlated; aThe residual error terms of items A, B, and C and of items G, H, I and J were correlated in confirmatory factor analysis.

RMSEA = root mean square error of approximation; CFI = comparative fit index; TLI = Tucker–Lewis index.
participation by schools, and we do not have information about those who did not choose to participate and whether they had significantly different characteristics from those who did participate. These limitations notwithstanding, the results validate the GSES as a unidimensional measure of self-efficacy and a reliable tool for measuring general self-efficacy among young women in Qatar.

Acknowledgements

We express our gratitude and appreciation to the entire research staff for their dedication to this work and to the study participants, without whom this research would not have been possible. We also express our appreciation to Yuk Fai Cheong of Emory University for his guidance on the data analysis.

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Competing interests: None declared.

References

Development and validation of a new tool to measure Iranian pregnant women’s empowerment

N.S. Borghei,1 A.Taghipour,2 R. Latifnejad Roudsari1 and A. Keramat3

ABSTRACT Empowering pregnant women improves their health and reduces maternal mortality, but there is a lack of suitable tools to measure women’s empowerment in some cultures. This study aimed to design and validate a questionnaire for measuring the dimensions of empowerment among Iranian pregnant women. After a literature review, and face and content validity testing, a 38-item questionnaire was developed and tested on a sample of 161 pregnant women. Factor analysis grouped the items into 3 subscales: educational empowerment (e.g. prenatal training), autonomy (e.g. financial independency and mental ability) and sociopolitical empowerment (e.g. involvement in social and political activities). Criterion validity testing showed a strong positive correlation of the total scale and subscales scores with the Kameda and the Spritzer empowerment scales. Cronbach alpha was 0.92 for total empowerment. A total of 32 items remained in the Self-Structured Pregnancy Empowerment Questionnaire, which is a valid new tool to measure the dimensions of pregnant women’s empowerment.

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Introduction

Empowerment of women during pregnancy gives them control over their own care and health (1) and teaches mothers the necessary skills to handle their pregnancy. These knowledge and skills can help them with their parenting skills in the future (2). Measuring empowerment is a difficult task, however, as empowerment is an internal and hidden attribute that is determined by several important variables, such as culture, religion and the educational and financial status of the mother and her family (3). Therefore, empowerment needs to be assessed through measurable factors such as education, financial stability and decision-making power (4). Furthermore, women can be empowered in many ways and in different fields of their life. The common dimensions of women’s empowerment which have been evaluated include financial, social, cultural, legal, political, psychological and family, which cover some of the key terms used to define empowerment such as option, control, power and choice (5–7). Some researchers have measured empowerment with tools based on a small number of questions which evaluate only one or two aspects of empowerment (8–10). Meanwhile, different dimensions of empowerment may be conceptualized differently depending on the context (4,5). Despite the availability of numerous tools to measure women’s empowerment, it is still a challenge to find tools that are appropriate for the experiences and culture of each target population (11,12).

The maternal mortality ratio (MMR) in the Islamic Republic of Iran has remained steady in the last 3 years (2012–15) (13). There is some evidence that the MMR in certain developing countries can be reduced via the promotion of women’s empowerment during pregnancy (8). To achieve this goal, we need to be able to measure mothers’ empowerment and then to recognize and empower this vulnerable population with related training and educational programmes during pregnancy. No study has been done in the Islamic Republic of Iran to measure empowerment among pregnant women. Kameda and Shimada developed and validated a tool to evaluate prenatal training empowerment (14). Their study, however, evaluated psychological empowerment and was not able to measure other dimensions of empowerment during pregnancy. Considering the importance of reducing the MMR, improving empowerment among pregnant women and the lack of suitable tools for measurement of empowerment among pregnant women in our culture, the present study was conducted to design and validate a tool for measuring the dimensions of empowerment among Iranian pregnant women.

Methods and results

Study design

This study was performed in 3 phases. In the first phase, a questionnaire was developed with items covering social, cultural, economic, educational and political empowerment. During the second phase, the face and content validity of the tool were evaluated. In the third phase, the construct validity, criterion validity and internal consistency reliability of the tool were evaluated. Permission for this study was issued by the research committee and regional committee of ethics in Mashhad University of Medical Sciences, 25 January 2014.

Questionnaire development

To develop the tool, we used the 8 steps of the DeVellis scale development method. The first step was to define what the researcher intends to measure, in this case women’s empowerment during pregnancy. The next steps were the generation of an item pool via a literature search and determination of the response format using a 4-point Likert scale (steps 2 and 3) (15).

The inclusion criteria for selecting articles for the literature review for this study were all full-text papers that measured empowerment among Iranian women and were published in English or Persian languages in the last 20 years. The data were collected through databanks, including those of Elsevier, Science Direct and PubMed and Iranian data banks such as Civilica, SID and Magiran. The MeSH terms and keywords used for selecting papers in this study were as follows: “scale development”, “empowerment”, “measurement”, “psychometric properties”, “women’s empowering”, “women’s empowerment”, “Iran”. The studies were assessed for methodological quality using a critical appraisal framework (16) and poor quality studies were excluded. From the total of 1281 papers and articles identified, 103 related to empowerment during pregnancy were reviewed. Of these papers 92 did not measure the dimensions of empowerment and finally 11 articles that measured dimensions of empowerment among Iranian women were selected for the study. A brief description of the findings of the studies and their methods for measuring empowerment in women is provided in Table 1.

Although the social, cultural, economic and political dimensions of the tool were covered by the literature review, no published data were found regarding the measurement of the educational dimension of empowerment during pregnancy. To develop a questionnaire to measure this dimension, we sought help from reproductive health professionals and experts in the Islamic Republic of Iran. After adding the educational items to the questionnaire, the item pool was reviewed (step 4 of DeVellis’s scale development method). This extensive literature review resulted in a pool of 64 items.
<table>
<thead>
<tr>
<th>Study (reference)</th>
<th>Year of research</th>
<th>Dimension of empowerment</th>
<th>Components of empowerment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Froozanfar S et al.</td>
<td>2012</td>
<td>Economic</td>
<td>Having any skill; permission to work or study; economic autonomy/partnership in decisions on economic issues</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Social</td>
<td>Social activities; partnership in decisions on social and family issues</td>
</tr>
<tr>
<td>Maleki MR et al.</td>
<td>2012</td>
<td>Structural</td>
<td>Access to opportunities; access to information; access to support; access to resources; job activities</td>
</tr>
<tr>
<td>Saady H et al.</td>
<td>2012</td>
<td>Economic</td>
<td>Income resulting from production/job; access to loans and bank facilities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Social</td>
<td>Social awareness; social interaction; social participation</td>
</tr>
<tr>
<td>Kimiae SA</td>
<td>2011</td>
<td>Economic</td>
<td>Employment; monthly income; receiving loan</td>
</tr>
<tr>
<td>Sorosh Mehr H, et al.</td>
<td>2010</td>
<td>Economic/social</td>
<td>Job; monthly income; education; total property of woman</td>
</tr>
<tr>
<td>Gholipour A, Rahimian A</td>
<td>2009</td>
<td>Women's</td>
<td>Ownership; non-cash contributions; access to low-interest loans; income-generating projects; training; public education</td>
</tr>
<tr>
<td>Ghafari R et al.</td>
<td>2009</td>
<td>Economic</td>
<td>Acquiring or increasing income; loan repayment ability; money-saving power</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Political</td>
<td>Political participation; struggle for equality and to eliminate discrimination against women</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Social</td>
<td>Social presence; participation in public life; respected by other members of the community; creating communication beyond the local community with associations and social movements</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cultural</td>
<td>Crushing false images of women and taboos; creating positive images of women; impact on the formation and implementation of cultural affairs and participation in rituals, religious institutes and religious affairs</td>
</tr>
<tr>
<td>Faraji HA et al.</td>
<td>2009</td>
<td>Economic</td>
<td>Acquisition or increased income; repayment ability; power savings</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Political</td>
<td>Participation in elections and demonstrations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Social</td>
<td>Participation in religious sessions; charity donations; group activities; cooperation with neighbours</td>
</tr>
<tr>
<td>Shakoori A et al.</td>
<td>2007</td>
<td>Economic</td>
<td>Ability to repay loans; money-saving power; income increase</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Political</td>
<td>Participation in political activities such as voting in elections and demonstrations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Social</td>
<td>Changing attitude toward women's role; collectivism; willingness to participate in public environments</td>
</tr>
<tr>
<td>Ketabi M, Farokhy Z</td>
<td>2003</td>
<td>Women's</td>
<td>Education; access to financial resources; legal ownership; removing discrimination in the labour market and traditional beliefs</td>
</tr>
</tbody>
</table>
Face and content validity testing

To measure the validity of the included items (step 5 of DeVellis’s method), face and content validity were evaluated.

Face validity

Face validity was assessed using both qualitative and quantitative methods. In the qualitative phase a sample of the target population were asked to give their feedback on the difficulty, relevance and ambiguity of questionnaire items (17). Items were corrected based on the feedback from a sample of 10 nulliparous women.

In the quantitative phase, impact testing was applied to determine the importance of each phrase. Twelve specialists rated each item on a 5-point Likert scale (very highly important, highly important, important, less important and not important), scored from 1 to 5. If the resulting impact score was ≤ 1.5 that phrase was kept and selected for the next step; otherwise it was deleted (17). Finally, the researchers corrected the writing style and logic of the sentences for the questionnaire items.

A total of 7 items were deleted at the face validity stage.

Content validity

The content validity was assessed by calculation of the content validity ratio (CVR) and content validity index (CVI). For this phase, the items were forwarded to 20 reproductive health professionals and empowerment scholars; 12 of the specialists completed the questionnaire.

To calculate CVR, the experts were requested to specify whether each item was necessary for operating a concept in a set of items or not. Also, they were requested to score each item on a scale of 1 to 3, ranging from “not necessary”, “useful but not essential” to “essential”. Lawshe’s CVR formula was used: CVR = (Ne – N/2)/(N/2), in which Ne is the number of panellists indicating “essential” and N is the total number of panellists. The numeric value of CVR is determined by Lawshe’s table (based on the number of evaluators i.e. 0.56 for 12 persons). In this study if the result was higher than 0.56 and it was considered to be necessary, the question was kept (18).

The CVI determined that only 1 item lacked inter-rater proportion agreement about its relevance to the instrument as a whole (19). Questionnaire items rating is typically on a 4-point ordinal scale: 1 = not relevant, 2 = somewhat relevant, 3 = quite relevant, 4 = highly relevant. The formula is calculated as follows: (number of experts agreed about an item with 3 and 4 points)/(total number of experts) (20). In this study, items with CVI higher than 0.79 were considered as appropriate, and items rated 0.70–0.79 were corrected. Items with CVI < 0.7 were excluded (21). The average CVI was 91.3%, which was calculated using the formula: (sum of CVI)/(total number of items) (20).

A further 19 items were deleted at the content validity stage. Finally 38 items remained in the Persian-language Self-Structured Pregnancy Empowerment Questionnaire (SSPEQ).

Construct and criterion validity testing

For the 6th step, the 38-item SSPEQ was administered to a sample of mothers and then the construct and criterion validity of the questionnaire were examined in the 7th step.

Sampling

To calculate the sample size for this phase of the study, pilot sampling was conducted and data were obtained from 20 women who were randomly selected from urban health centres. An estimation was made of the correlation of the SSPEQ with other standard questionnaires. Considering α = 0.05 and β = 0.2, a minimum sample size was estimated to be 141 women.

The questionnaire was then assessed in a cross-sectional study conducted on nulliparous pregnant mothers or mothers who had delivered their babies during the last 2 months in Gorgan city, which is in the centre of Golestan province in the north-west of the Islamic Republic of Iran. The inclusion criteria for the study were ability to read and write and agreement to participate. Multiparous and high-risk pregnant women were excluded from the study. Because of the importance of maximum variation for samples, randomized cluster sampling was used to select health centres. Private, educational, and government health centres were included in the study.

We approached 180 nulliparous mothers, selected via random cluster sampling. After exclusion of 19 women (10.3%) who did not wish to participate, 161 mothers completed the questionnaires.

All ethical considerations were taken into account, such as voluntary participation of mothers after they had been given full information about the purpose of the study, guarantees about the confidentiality of the data and written consent for participation.

Procedure

The SSPEQ was presented as a self-reporting questionnaire to the mothers. The questionnaire had 2 parts: sociodemographic information [maternal age, gravidity, marriage age, literacy, length of marriage, unwanted pregnancy, family size, ethnicity, job, living status (own or rent house)] and the 38 scale items. It was completed by the 161 selected pregnant women over a 3-month period in 2014. The data were entered into SPSS, version 16 software for analysis. A great majority of pregnant mothers (92.5%) were primigravidae and most of them (87.0%) lived independently with their husbands (Table 2).
the construct validity, exploratory factor analysis was used (7th step of DeVellis’s method).

The results of exploratory factor analysis together with the varimax rotation method and Kaiser normalization showed that the Bartlett test of sphericity was significant. So, sphericity was rejected ($\chi^2 = 4.394, P \leq 0.001$). The Kaiser–Meyer–Olkin measure of sampling for this set of variables was 0.864, which showed the adequacy of the sample size for factor analysis (22). To reduce the number of factors, eigenvalues were used (eigenvalue > 1) and 5 items ($1,2,8,9,13$) with factor loading < 4.0 were excluded. Therefore, the explanatory factor analysis covered 33 out of 38 items.

Factor analysis classified the items in the questionnaire into 3 groups. As can be seen in Table 3, items 24–38, associated with prenatal training, were covered under the 1st group which was called “educational empowerment”. Items 13–18, related to financial independency, and items 12, 19 and 20, related to mental ability, were covered under the 2nd group which was termed “autonomy”. Finally, items 3–7 and 10, related to social empowerment, plus 3 items from political empowerment, were covered under the 3rd group called “sociopolitical empowerment”. The 3 factors extracted from factor analysis of variance explained a total of 62.5% of the variance.

Criterion validity testing
To evaluate the criterion validity, the Kameda pregnancy empowerment scale and the Spritzer psychological empowerment scale were used as gold standards (14,23). The validated, Persian-language versions of the tools were used. Spearman correlation coefficients of the SSPEQ scores with the scores of the Spritzer and Kameda scales were evaluated using PASS software. The results indicated that there was a strong positive correlation between the SSPEQ total scale and subscales scores and the Spritzer and Kameda scales. A summary of the results is shown in Table 4.

Reliability
To evaluate internal consistency, Cronbach a coefficient was calculated for all scales and subscales. The minimum accepted Cronbach reliability value for sociopsychological scales is considered to be 0.7 (24). The Cronbach a coefficients were 0.74 for the subscale sociopolitical empowerment, 0.97 for educational empowerment, 0.85 for economic empowerment and 0.92 for total empowerment (Table 5). To increase the internal consistency of the items, the correlation between each item and the total items was evaluated and invalid items were excluded (22). After excluding 1 item, a total of 32 items remained and the 8th step of DeVellis’s scale development method was completed.

Discussion
The present tool evaluated the sociopolitical, autonomy and educational dimensions of empowerment using a 32-item questionnaire. The average content validity of the SSPEQ was 0.913, which is higher than the acceptable value of 0.90 (25). Cronbach a coefficient for the total scale was 0.92 and above 0.7 for all of the subscales. Many researchers have used the same statistical approach and their values are consistent with our results (14,23,26).

In the present study, factor analysis for construct validity was considered as a necessary step to create the tool (15). Some researchers also used this method for construct validity analysis (14,24). For adequate sampling for factor analysis, the Kaiser–Meyer–Olkin value of

| Table 2 Demographic characteristics of the survey sample of mothers ($n = 161$) |
|---------------------------------|----------------|----------------|
| Variable                        | Value          | Range          |
| Age (years)                     | 25.8 (4.79)    | 15–40          |
| Age at marriage (years)         | 22.13 (4.46)   | 12–39          |
| Duration of marriage (years)    | 2.89 (1.76)    | 1–8            |
| Family size                     | 2.28 (0.86)    | 2–7            |
| Ethnicity                       |                |                |
| Fars                            | 113            | 70.2           |
| Indigenous                      | 21             | 13.0           |
| Sistani                         | 16             | 9.9            |
| Turkman                         | 6              | 3.7            |
| Other                           | 5              | 3.2            |
| Literacy                        |                |                |
| High                            | 63             | 39.1           |
| Intermediate                    | 62             | 38.5           |
| Low                             | 36             | 22.3           |
| Occupation                      |                |                |
| Housewife                       | 129            | 80.1           |
| Employee                        | 32             | 19.9           |
| Pregnancy planning              |                |                |
| Wanted pregnancy                | 147            | 91.3           |
| Unwanted pregnancy              | 14             | 8.7            |

SD = standard deviation.
Table 3  Factor loading of the women’s empowerment items in the Self-Structured Pregnancy Empowerment Questionnaire among pregnant women (n = 161)

<table>
<thead>
<tr>
<th>Item #</th>
<th>Dimension of empowerment/item</th>
<th>Factor loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Factor 1</td>
</tr>
<tr>
<td>Social relationships</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>I negotiate with others very well</td>
<td>0.232</td>
</tr>
<tr>
<td>2</td>
<td>I can persuade others to do what I want</td>
<td>0.253</td>
</tr>
<tr>
<td>3</td>
<td>I connect with other people very well</td>
<td>0.261</td>
</tr>
<tr>
<td>4</td>
<td>I am aware of my society’s problems</td>
<td>-0.017</td>
</tr>
<tr>
<td>5</td>
<td>I have the spirit of cooperation and interaction with others</td>
<td>0.244</td>
</tr>
<tr>
<td>6</td>
<td>I am in touch with organizations and community groups</td>
<td>0.234</td>
</tr>
<tr>
<td>7</td>
<td>I work with a group of neighbours to do teamwork</td>
<td>0.131</td>
</tr>
<tr>
<td>8</td>
<td>I participate in my own training classes</td>
<td>0.281</td>
</tr>
<tr>
<td>9</td>
<td>I have my own position among my peers</td>
<td>0.143</td>
</tr>
<tr>
<td>10</td>
<td>I establish sessions to solve the problems of others</td>
<td>0.233</td>
</tr>
<tr>
<td>11</td>
<td>I care about teamwork</td>
<td>0.328</td>
</tr>
<tr>
<td>12</td>
<td>I have social trust and acceptance</td>
<td>0.102</td>
</tr>
<tr>
<td>Financial ability</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>I am able to manage my personal property such as houses and cars</td>
<td>0.023</td>
</tr>
<tr>
<td>14</td>
<td>I have the ability to repay a loan</td>
<td>0.061</td>
</tr>
<tr>
<td>15</td>
<td>I have money-saving power</td>
<td>0.198</td>
</tr>
<tr>
<td>16</td>
<td>I am able to earn money for my family</td>
<td>0.118</td>
</tr>
<tr>
<td>17</td>
<td>I am able to increase my family income</td>
<td>0.075</td>
</tr>
<tr>
<td>18</td>
<td>I can spend my personal income any way that I want</td>
<td>0.075</td>
</tr>
<tr>
<td>Political activity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>I vote for anyone that I want</td>
<td>0.020</td>
</tr>
<tr>
<td>20</td>
<td>I can easily participate in my favourite speeches and meetings</td>
<td>0.084</td>
</tr>
<tr>
<td>21</td>
<td>I have actively participated in demonstrations and political activities</td>
<td>-0.041</td>
</tr>
<tr>
<td>22</td>
<td>I can easily become a candidate in town elections</td>
<td>-0.045</td>
</tr>
<tr>
<td>23</td>
<td>I can easily participate in political and nongovernmental organizations/associations</td>
<td>-0.021</td>
</tr>
<tr>
<td>Prenatal training</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Prenatal training empowered me in my life</td>
<td>0.688</td>
</tr>
<tr>
<td>25</td>
<td>I acquired useful information about how to overcome pregnancy problems</td>
<td>0.762</td>
</tr>
<tr>
<td>26</td>
<td>Prenatal trainings helped me to control my body weight</td>
<td>0.785</td>
</tr>
<tr>
<td>27</td>
<td>Prenatal training improved my quality of life</td>
<td>0.835</td>
</tr>
<tr>
<td>28</td>
<td>Prenatal training helped me to have better nutrition</td>
<td>0.866</td>
</tr>
<tr>
<td>29</td>
<td>With prenatal training, I know about abnormal pregnancy symptoms</td>
<td>0.828</td>
</tr>
<tr>
<td>30</td>
<td>I learned during pregnancy training about when I must go to the hospital emergency</td>
<td>0.818</td>
</tr>
<tr>
<td>31</td>
<td>Prenatal training taught me how to prepare for breastfeeding</td>
<td>0.832</td>
</tr>
<tr>
<td>32</td>
<td>Prenatal training improved my relationship with others</td>
<td>0.814</td>
</tr>
<tr>
<td>33</td>
<td>Prenatal training increased my decision-making power</td>
<td>0.805</td>
</tr>
<tr>
<td>34</td>
<td>Prenatal training helped me to take better care of my child</td>
<td>0.745</td>
</tr>
<tr>
<td>35</td>
<td>Prenatal training answered most of my questions about pregnancy and childbirth</td>
<td>0.865</td>
</tr>
<tr>
<td>36</td>
<td>Pregnancy training helped me to be psychologically calm</td>
<td>0.875</td>
</tr>
<tr>
<td>37</td>
<td>Prenatal training enabled/will enable me to cope with labour pains</td>
<td>0.789</td>
</tr>
<tr>
<td>38</td>
<td>Prenatal training helped me to have a better memory about pregnancy/delivery</td>
<td>0.836</td>
</tr>
</tbody>
</table>

Items shown are translations of the Persian-language items. Shading indicates factor labels.
sampling adequacy for each set of variables must be higher than 0.8. Our value was calculated as 0.864, which shows the adequacy of the sample size (22). The total variance explained was 62.5%, which is sufficient to meet the basic requirements of the phenomenon being investigated (15,27).

After exploratory factor analysis, items about prenatal training were placed in a group called educational empowerment.

The autonomy group of items included the economic and political empowerment items. Most of the articles that we reviewed showed autonomy as one of the most important indicators of women’s empowerment, consisting of knowledge, decision-making, and physical, emotional, economic and social self-reliance (28). However, only one study considered financial security by itself to be autonomy empowerment (29). Ahmed et al. measured empowerment scores for developing countries based on a set of women’s autonomy questions and found that when a mother has autonomy, she can more easily make decisions about her own health (8). Thus, autonomy should be considered as an indicator for a pregnant women’s empowerment.

Some activities that are associated with political and social empowerment were covered under the third group of items: sociopolitical empowerment. Examples of sociopolitical empowerment include being able to vote and to participate in political meetings and elections. Political empowerment for women is directly related to their level of participation in politics, their struggle to attain equal rights and their attempt to remove discrimination against them (7). However, in Iranian society there is a low level of political empowerment, presumably due to low levels of education and political awareness among women. In the studied society, political empowerment is limited to participation in voting and demonstrations (30). Social activity was not considered as a separate part of political empowerment among the studied women, as many researchers considered social support and activities as part of political empowerment (7,30–32).

It is surprising that all of the items related to cultural empowerment were excluded during the validation process, although this was also found in Mahotra et al.’s study (7). Therefore, the cultural dimension of empowerment was not measured in the present study.

Criterion validity analysis indicated that there was a strong positive correlation between the autonomy and educational empowerment dimensions of the SSPEQ and Kameda empowerment but no significant correlation between sociopolitical empowerment and Kameda empowerment. It seems that the Kameda tool was designed to evaluate prenatal training empowerment; therefore, in that study, the sociopolitical dimension had a lower correlation with educational aspects of empowerment. Spritzer’s tool is therefore a better scale to measure empowerment. Spritzer’s tool showed a high correlation with the subscales of the SSPEQ, which indicates the high validity of the present tool.

As mentioned before, evaluating the level of empowerment is critical for planning training and educational programmes for pregnant women. However, before this study, there was no specific scale that measured all aspects of empowerment in the specific cultural context of Iranian women. Also, during the literature review, it was noticed that different tools (8–10,14) only focussed on certain dimensions of empowerment and there was no tool that evaluated all dimensions of women’s empowerment cumulatively. The SSPEQ developed in this study measures the 3 main dimensions of empowerment: sociopolitical, autonomy and educational. We believe that the present tool has the ability to measure empowerment more comprehensively than previous tools.

The initial analysis indicates that the developed tool may be helpful for the precise measurement of empowerment among pregnant women, and it will indicate mechanisms that can

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### Table 4: Spearman correlation coefficients of the total scale and subscales of the Self-Structured Pregnancy Empowerment Questionnaire (SSPEQ) and the Spritzer and Kameda scales among pregnant women (n = 161)

<table>
<thead>
<tr>
<th>Standard scales</th>
<th>SSPEQ dimensions of empowerment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sociopolitical</td>
</tr>
<tr>
<td>Spritzer psychological empowerment scale</td>
<td>0.405*</td>
</tr>
<tr>
<td>Kameda empowerment scale</td>
<td>0.395*</td>
</tr>
</tbody>
</table>

Spearman correlation coefficient, *P < 0.001.

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### Table 5: Cronbach alpha coefficients of the total scale and subscales of the Self-Structured Pregnancy Empowerment Questionnaire (SSPEQ) among pregnant women

<table>
<thead>
<tr>
<th>SSPEQ dimensions of empowerment</th>
<th>Cronbach a (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sociopolitical</td>
<td>73.5</td>
</tr>
<tr>
<td>Autonomy</td>
<td>85.1</td>
</tr>
<tr>
<td>Educational</td>
<td>96.6</td>
</tr>
<tr>
<td>Total</td>
<td>92.4</td>
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</tbody>
</table>
be applied to improve empowerment during pregnancy with a specific empowerment-based programme. Unfortunately, in the past 3 years, the overall MMR has remained unchanged in the Islamic Republic of Iran, and perhaps it is incorrect to assume that the only barrier to decreasing MMR is related to hospital equipment. In the Islamic Republic of Iran MMR has been shown to be closely related to husband’s literacy; for example, in certain ethnic groups, such as the Turkmen in Golestan province, the MMR was 2.2 times higher than in other areas of the province (33). Women’s lack of power to make decisions about their health or fertility was the main reason for high mortality in that group. It has been proposed that empowering women to take control over their own lives and health can play a major role in reducing MMR (34).

This tool will be open to redevelopment based on the feedback it may receive in the future. Since it is important to obtain the validity of the tool at the international level, the authors propose that similar studies be performed in other populations and in multiparous and high-risk mothers. This tool may be applicable to all young adult women of reproductive age. However, because of the importance of the effect of empowerment on MMR, the author focused on prenatal empowerment.

One of the limitations of this study was the exclusion of multiparous and high-risk pregnant women. Also, the study was limited by the cross-sectional nature of the data. The cross-sectional measures did not capture the dynamics of empowerment and we did not study causal relationships. Despite these limitations, the study’s strengths are the use of multiple empowerment indicators, the inclusion of diverse ethnic groups, the use of randomized sampling and the tool’s compatibility with the existing tools.

To reach to the goal of the Iranian Government’s fifth development plan, we must reduce MMR to 15 per 1000 births by the end of 2015. This requires serious and comprehensive planning (13). Many health professionals believe that maternal deaths are more likely to occur among pregnant women with a low level of empowerment (8). It is recommended for policy-makers to establish an appropriate monitoring system for maternal care programmes, improve the quality of services led by midwives, develop a screening programme to recognize the empowerment needs of pregnant women, establish training and educational programmes for women, and monitor mothers closely during pregnancy. In such a way pregnant women with a low level of empowerment will be recognized and protected, with the ultimate target of reducing MMR.

Acknowledgements

We express our gratitude towards all the midwives for their cooperation and all the pregnant women who cordially participated in this study and Rouhanguz Mahjoub for English editing of this paper.

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Burnout among physicians and nursing staff working in the emergency hospital of Tanta University, Egypt

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ABSTRACT Little is known about professional burnout among health-care workers in Egypt. The current study aimed to reveal the extent of burnout among physicians and nursing staff working in the emergency hospital of Tanta University and to identify some of its determinants. A cross-sectional study was carried out on all physicians (n = 266) and a systematic random sample of nurses (n = 284). Burnout was assessed using the Maslach Burnout Inventory and its subscales. Most of the participants (66.0%) had a moderate level of burnout and 24.9% of them had high burnout. Multivariate analysis of variables affecting burnout showed that age, sex, frequency of exposure to work-related violence, years of experience, work burden, supervision and work activities were significant predictors of burnout among the respondents. The authors recommend health education interventions during pre-employment training programmes for prevention of burnout syndrome and periodic screening for early detection and management of burnout.

L’épuisement professionnel chez des médecins et des personnels infirmiers au service des urgences de l’hôpital universitaire de Tanta (Égypte)

RÉSUMÉ Le syndrome d’Épuisement professionnel chez les agents de santé en Égypte est assez mal connu. La présente étude visait à mettre en évidence la fréquence et l’étendue des cas d’épuisement professionnel chez des médecins et personnels infirmiers exerçant aux urgences de l’hôpital universitaire de Tanta et à identifier certains de ses déterminants. Une étude transversale a été menée auprès de tous les médecins (n = 266) et d’un échantillon aléatoire systématique des personnels infirmiers (n = 284). L’épuisement a été évalué à l’aide du Test d’inventaire de Burnout de Maslach et de ses sous-échelles. La plupart des participants (66.0%) présentaient un niveau d’épuisement modéré tandis que pour 24.9% d’entre eux il était élevé. Une analyse multivariée des variables ayant un impact sur l’épuisement professionnel a démontré que l’âge, le sexe, la fréquence des expositions à la violence liée au travail, les années d’expérience, la charge de travail, la supervision et les activités professionnelles étaient des facteurs prédictifs importants de l’épuisement professionnel chez les répondants. Les auteurs recommandent des interventions en matière d’éducation sanitaire au cours de programmes de formation avant l’entrée dans la vie active pour prévenir le syndrome d’épuisement professionnel, puis un dépistage systématique visant la détection précoce et la prise en charge de ce syndrome.

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Introduction

Burnout is considered an epidemic of modern society and the issue of occupational stress and burnout is receiving increasing attention worldwide. Burnout focuses on specific stressors in the workplace and the environmental pressures affecting the health of employed people (1). It was first described in the mid-1970s by Freudenberger and ever since it has been the subject of many studies (2). Burnout is a psychological term for the experience of long-term exhaustion and diminished interest. Despite this, burnout is not a recognized disorder in the Diagnostic and Statistical Manual of Mental Disorders (3).

Burnout syndrome can have a detrimental effect on employee satisfaction, work productivity, mental and physical health, rates of absenteeism and staff turnover and can affect family roles and functions (4). Burnout is an increasing problem among medical staff and is highly prevalent in health-care settings. It is associated with difficult working conditions and feelings of dissatisfaction with work (5). A study among German physicians found that more than one-third of the health-care professionals examined were experiencing professional burnout (6). Another study revealed that burnout can affect up to 45% of medical and nursing staff (7). The impact of burnout not only affects the suffering physicians but extends to their patients if the quality of medical care delivered is undermined (8).

Emergency services are the busiest and most stressful units of hospitals. Their staff might be at risk of burnout syndrome due to inadequate physical working conditions and emotional problems. Staff are under sustained stress owing to the crowded working environment, severity of cases treated and rotational work schedules that disrupt social and family relationships. Furthermore, conflicts with patients’ companions, unsafe working environments, work difficulties and critical care decisions may play a role in the development of burnout syndrome (9).

Little is known about professional burnout among health-care workers in Egypt. The current study was conducted to reveal the prevalence of burnout among physicians and nursing staff working in the emergency hospital of Tanta University and to identify some of the determinants of burnout.

Methods

Study design and setting

A cross-sectional study was conducted over the period 1 November 2012 to 30 April 2013 in the emergency hospital of University of Tanta. This is a 450-bed hospital with the following departments: internal medicine, general surgery, neurosurgery, orthopaedics, burn care unit, toxicology, urology, radiology, intensive care unit and recovery unit. The hospital receives mainly injuries and road traffic accidents from Gharbia governorate and other nearby governorates, in addition to different surgical and medical emergency conditions. The hospital is staffed by 311 physicians who work in different departments in rotating shifts, 490 nurses, 78 head nurses and 70 ancillary workers and technicians. The study was approved by the internal review board of Tanta Faculty of Medicine.

Sampling

The study participants were asked to fill a pre-designed self-administered questionnaire sheet that was designed for this study with sections on sociodemographic, work and health variables; job satisfaction; and the assessment of burnout.

Sociodemographic, work and health variables

For the assessment of the determinants of burnout, data were collected about sociodemographic variables (age, sex, residence, marital status, number of family members, number of the rooms in the house, educational level); job characteristics and experiences (job type, department or ward type, years of experience, number of shifts per month, frequency of dealing with and caring for dying patients, previous exposure to work-related violence and its type, and private work outside the hospital); attitudes to work (absenteeism in the last 3 months; thoughts of changing job or moving to a different ward or department in the last 3 months); and health problems (diseases suffered; visits to a
physician or admission to hospital in the last 3 months).

**Job satisfaction questionnaire**

The job satisfaction questionnaire included 7 main categories as follows:

- General working conditions (4 items about: hours worked each week, flexibility in scheduling, location of work and amount of paid vacation time/sick leave offered).
- Pay and promotion potential (5 items about: salary, opportunities for promotion, benefits, e.g. health insurance, life insurance, job security and recognition for work accomplished).
- Work relationships (3 items about: relationships with co-workers, relationship(s) with supervisor(s) and relationships with subordinates, if applicable).
- Use of skills and abilities (3 items about: opportunity to utilize skills and talents, opportunity to learn new skills and support for additional training and education).
- Work activities (2 items about: variety of job responsibilities, degree of independence associated with work roles and adequate opportunity for periodic changes in duties).
- Work burden (4 items about: workload, time available for family, friends or leisure, work-related stress and administrative burden).
- Supervision (3 items about: method of supervision, whether supervisor admits making errors or not and whether supervisor asks for advice before implementation of tasks).

Respondents were asked to rate how satisfied they were for each item on a 5-point Likert scale from 1 (extremely dissatisfied) to 5 (extremely satisfied). The satisfaction was arbitrarily classified as: dissatisfied (score < 33.3%); average satisfaction (33.3–66.7%); and satisfied (66.7–100.0%).

**Maslach Burnout Inventory**

The Maslach Burnout Inventory (MBI), first reported by Maslach et al. in 1996, was the assessment instrument used in the study. It has become the almost universally accepted gold standard to assess burnout due to its high reliability and validity. It was translated into Arabic and then back translated into English, to ensure correct translation of the questions. The Arabic version was revised by 7 experts and tested in a pilot study. The reliability of the questionnaire was tested by Cronbach alpha and found to be 0.81.

The MBI includes 22 items with a 7-point Likert-type rating scale. Items are written in the form of statements about personal feelings or attitudes. The frequency scale is labelled at each point, ranging from 0 (never) to 6 (every day). The maximum score of the total burnout scale is 132. The MBI has 3 subscales: emotional exhaustion, which refers to both physical and mental exhaustion (statements no. 1–9); depersonalization, which consists of attitude changes of the individual when coming into contact with those who receive his/her services as he/she begins to display a cold and impersonal contact with suffering (statements no. 10–14); and reduced professional accomplishment, which measures perception of the influence of the others, well-being with his/her work, as well as the relationship with problems, evidencing a feeling of dissatisfaction (statements no. 15–22). Burnout is conceptualized as a continuous variable, ranging from a low to average to high probability of experiencing feelings of each element of burnout. A high degree of burnout is reflected in high scores on the emotional exhaustion (maximum score of 54) and depersonalization subscales (maximum score of 30) and in low scores on the reduced professional accomplishment subscale (maximum score of 48). An average degree of burnout is reflected in average scores on the 3 subscales. A low degree of burnout is reflected in low scores on the emotional exhaustion and depersonalization subscales and in higher scores on the reduced professional accomplishment subscale.

Subscales were classified into low, average and high level of burnout according to Table 1. On the total burnout scale scores of 1–33 are considered as low, 34–66 as average and 67–99.9 as high level of burnout.

**Data collection**

A pilot test on 10% of the subjects (whose results were not included in the study) was carried out before starting data collection to determine potential obstacles, evaluate the adequacy of the designed questionnaire and to estimate the time needed to complete it.

Data were collected by asking the participants to fill the pre-designed self-administered questionnaire. Data collectors visited the hospital 5 days per week and collected an average of 5 questionnaire forms per day. The questionnaire was completed and returned to data collectors in the same session. Written and verbal consent were obtained from subjects prior to their

| **Table 1: Classification of scores on subscales of the Maslach Burnout Inventory (MBI)** (10) |
|---------------------------------------------------|-----------------------------------|-------------------------------|
| **MBI subscales** | **Level of burnout** | |
| | **Low** | **Average** | **High** |
| Emotional exhaustion score | < 16 | 17–26 | > 27 |
| Depersonalization score | < 6 | 7–12 | > 13 |
| Reduced professional accomplishment score | > 39 | 38–32 | < 31 |
participation in the study and those who refused to participate were excluded. Confidentiality and privacy were guaranteed during the whole period of the study by anonymous completion of the questionnaires.

**Statistical analysis**

Organization, tabulation, presentation and analysis of data were performed using SPSS, version 19. Numerical data were presented as mean and standard deviation (SD). Student t-test, linear correlation and linear regression analysis were used for statistical analysis. Categorical data were presented as numbers and percentages and the chi-squared test was used for statistical analysis. When the chi-squared test was not appropriate, the Monte Carlo exact test was applied. The level of significance adopted was $P < 0.05$.

**Results**

**Demographic data**

The questionnaires were completed by 523 staff: 284 nurses and 239 physicians. About one-third of staff had graduated from the secondary school of nursing (31.2%), while 21.6% and 24.3% had graduated from the faculty of medicine with a bachelor of medicine or postgraduate degree respectively (Table 2).

The age range of participants was 20–53 years with a mean of 31.0 (SD 6.0) years. The majority of participants were aged below 40 years (91.8%), female (72.3%) and currently married (73.4%) (Table 1). More than half were from urban areas (57.9%). A total of 42.2% had a family size of 5+. The majority of staff (44.9%) had a crowding index at home of 1–1.5.

**Work characteristics**

Table 3 shows that 31.0% of physicians dealt with critically ill patients a few times a year, 20.1% once a month and 21.3% once a week. In contrast, 22.5%...
of nurses dealt with critical patients once a week and 27.1% more than once daily. The difference between nurses and physicians was statistically significant \( (P = 0.001) \). The majority of physicians and nurses reported that they had been exposed to verbal violence at work (91.6% and 95.8% respectively) \( (P = 0.049) \). Nurses were more exposed to physical violence than physicians (20.4% and 10.5% respectively), a difference that was statistically significant \( (P = 0.002) \). Few respondents reported being exposed to sexual violence at work and the difference between nurses and physicians was not statistically significant \( (P = 1.000) \).

### Levels of burnout

Table 4 shows that 46.9% of respondents scored high on emotional exhaustion, while 44.9% had average levels of depersonalization and a majority (97.7%) had high levels of reduced personal accomplishment. Regarding the total burnout scale, most of the study subjects (66.0%) were classified as...
having a moderate level of burnout and 24.9% as having high burnout.

More than half of nurses (52.8%) experienced high emotional exhaustion compared with 39.7% of physicians, a difference that was statistically significant ($P < 0.001$). For the depersonalization subscale, 48.2% of nurses had low scores and 44.4% moderate scores, compared with 31.8% and 45.6% of physicians respectively, and the difference was statistically significant ($P < 0.001$). Almost all the physicians (99.2%) experienced highly reduced feelings of personal accomplishment and the rate was slightly lower among nurses (96.5%) ($P = 0.041$). Regarding the total burnout scale, the difference between nurses and physicians was not statistically significant.

### Job satisfaction

Table 5 shows that the majority of nurses and physicians had average levels of job satisfaction (89.4% and 81.6% respectively), a difference that was statistically significant ($P = 0.028$). For general work conditions, 83.8% of nurses experienced average satisfaction compared with 61.9% of physicians ($P = 0.001$). Concerning promotion and financial aspects, 71.1% of nurses experienced average satisfaction compared with 74.9% of physicians ($P = 0.001$). For relationships in work, 64.8% of nurses were satisfied with their colleagues, supervisors and subordinates compared with 60.3% of physicians ($P = 0.019$). Fewer nurses had an average satisfaction level regarding using skills and abilities (51.4%) compared with physicians (69.9%) ($P = 0.020$). Regarding work activities, the majority of nurses and physicians (62.7% and 68.6% respectively) experienced average satisfaction and around one-fifth were dissatisfied (21.8% and 21.8% respectively) ($P = 0.020$). The majority of nurses (69.0%) and more than half of physicians (56.9%) had average satisfaction regarding work burden. On the other hand, 28.5% and 38.5% of nurses and physicians respectively were dissatisfied with the work burden ($P = 0.013$). As regards supervision at work, 45.8% of nurses had average satisfaction compared with 56.9% of physicians ($P = 0.001$).

### Predictors of burnout

Multivariate analysis by linear regression revealed that age, frequency of

<table>
<thead>
<tr>
<th>Item</th>
<th>Dissatisfied</th>
<th>Level of job satisfaction</th>
<th>Satisfied</th>
<th>$\chi^2$-value</th>
<th>$P$-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>General work condition</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Nurse</td>
<td>17</td>
<td>6.0</td>
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<td>83.8</td>
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<td>148</td>
<td>61.9</td>
<td>36</td>
</tr>
<tr>
<td>Promotion and financials</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Nurse</td>
<td>64</td>
<td>22.5</td>
<td>202</td>
<td>71.1</td>
<td>18</td>
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<tr>
<td>Physician</td>
<td>24</td>
<td>10.0</td>
<td>179</td>
<td>74.9</td>
<td>36</td>
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<tr>
<td>Relationships in work</td>
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<td></td>
<td></td>
</tr>
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<td>1.4</td>
<td>96</td>
<td>33.8</td>
<td>184</td>
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<tr>
<td>Physician</td>
<td>14</td>
<td>5.9</td>
<td>81</td>
<td>33.9</td>
<td>144</td>
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<tr>
<td>Using skills and abilities</td>
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<td>Nurse</td>
<td>72</td>
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<td>146</td>
<td>51.4</td>
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<td>44</td>
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<td>167</td>
<td>69.9</td>
<td>28</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Nurse</td>
<td>62</td>
<td>21.8</td>
<td>178</td>
<td>62.7</td>
<td>44</td>
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<tr>
<td>Physician</td>
<td>57</td>
<td>23.8</td>
<td>164</td>
<td>68.6</td>
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<tr>
<td>Work burden</td>
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<td></td>
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<tr>
<td>Nurse</td>
<td>81</td>
<td>28.5</td>
<td>196</td>
<td>69.0</td>
<td>7</td>
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<tr>
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<td>92</td>
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<td>136</td>
<td>56.9</td>
<td>11</td>
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<td>19.0</td>
<td>130</td>
<td>45.8</td>
<td>100</td>
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<tr>
<td>Physician</td>
<td>63</td>
<td>26.4</td>
<td>136</td>
<td>56.9</td>
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<td>Total job satisfaction</td>
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<td>245</td>
<td>89.4</td>
<td>19</td>
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<td>20</td>
<td>8.4</td>
<td>195</td>
<td>81.6</td>
<td>24</td>
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</tbody>
</table>
work-related exposure to violence, years of experience, work burden, supervision and work activities were the significant predictors for burnout (Table 6).

Discussion

Occupational-related burnout is increasingly recognized as a serious problem affecting many people working in the human services, particularly health-care workers, who suffer from negative feelings for self, work and life (13). Health-care professionals work with others in emotionally demanding situations and are exposed to their clients’ psychological, socio-economic and physical problems. As a result, burnout can easily develop, especially in sectors where critical care is provided (14). Burnout has been associated with absenteeism from work, ineffectiveness, interpersonal conflicts, lower productivity, job dissatisfaction, reduced organizational commitment and staff turnover. It predicts increased rates of illness, fatigue, substance misuse, depression, anxiety and irritability (15).

The aim of this study was to assess the prevalence of burnout syndrome among health-care workers of the emergency hospital, University of Tanta and to identify some of its determinants. About two-thirds of our study subjects had a moderate level of burnout and about one-quarter had a high level of burnout. This may be due to the overburdened health-care system in Egypt, especially the emergency sector, understaffing, especially among nursing staff, lack of resources, inadequate salaries, lack of control, difficult work schedules with long hours of work and frequent shifts, inadequate security and poor career advancement.

The results of studies on burnout are controversial, with some studies revealing alarmingly high rates of burnout among physicians, while other studies finding much lower rates. In Egypt, Yousef et al. in their study in Suez Canal University about the prevalence of burnout syndrome among residents of the university hospitals showed that 63.1% of the responding residents met the criteria for burnout (12). Elsewhere in the Eastern Mediterranean Region, Halayem-Dhoubi et al. in Tunisia found that burnout syndrome was highly prevalent among nurses and medical residents (16). In Saudi Arabia, Al-Turki et al. reported that the prevalence of burnout syndrome among multinational nurses was high (17). In contrast, a study carried out in Qatar found that 12.6% of the responding primary health-care physicians were experiencing burnout (18).

Previous European studies using the MBI reported widely varying burnout rates among medical and paramedical teams, ranging from 15–82% (19,20). The prevalence of burnout among staff of the departments of anaesthesia and critical care medicine was about 30% of nurses and 40–50% of physicians (21). Cydulka and Korte mentioned that previous estimates of burnout among emergency physicians in the United States of America range from 25–60% and more than 90% among Canadian emergency physicians (22).

In African countries, high rates of burnout among maternal health staff at a referral hospital in Malawi have been reported (23). Other studies performed in Nigeria among health professionals (24) and in a Kenyan psychiatric hospital (25) have described high rates of burnout.

In South America, most studies on burnout syndrome were from Brazil. The prevalence of burnout syndrome among community-based health agents in the city of Sao Paulo was been estimated to be 24% (26). Another Brazilian study performed on nurses in Santa Catarina showed that 35.7% displayed burnout (27).

In the last few years, several Asian studies have focused on burnout syndrome. From Singapore, Lim et al. reported that Singaporean nurses experienced high levels of stress related to work and emergency care (28). In Mongolia, a study by Bagaajav et al. detected an increasing level of stress among medical doctors. Excessive workload was a significant source of developing burnout, job stress and job dissatisfaction (29).

The Australian Medical Association performed a health survey on 914 Australian and New Zealand junior doctors and found that 69% had burnout symptoms (30).

The difference in the prevalence of burnout syndrome across different countries can possibly be explained by variations in culture, the nature of the health system (including structural and service delivery problems in different countries), patients’ attitudes and the role of physicians as health-care providers. There are also differences in the assessment scales and study designs used in the various studies of burnout syndrome (31).

Almost half of our respondents (46.9%) showed high emotional

Table 6 Multivariate analysis of variables affecting scores for total burnout on the Maslach Burnout Inventory among the studied health-care professionals

<table>
<thead>
<tr>
<th>Variable</th>
<th>t-value</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>5.097</td>
<td>0.001</td>
</tr>
<tr>
<td>Frequency of exposure to work-related violence</td>
<td>4.567</td>
<td>0.001</td>
</tr>
<tr>
<td>Years of experience</td>
<td>3.969</td>
<td>0.001</td>
</tr>
<tr>
<td>Work burden</td>
<td>3.960</td>
<td>0.001</td>
</tr>
<tr>
<td>Supervision</td>
<td>2.669</td>
<td>0.008</td>
</tr>
<tr>
<td>Work activities</td>
<td>2.570</td>
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</table>
exhaustion, 97.7% showed highly reduced personal accomplishment and 14.4% showed high depersonalization. The subscale of reduced personal accomplishment reflects lower competence at work, which in turn affects the effectiveness of work leading to decreased quality of health-care services delivered.

Kalemoglu and Keskin in Istanbul, Turkey, reported that among emergency service personnel, 44.7% showed high emotional exhaustion, 33.2% high depersonalization and 28% high reduced professional accomplishment (9). A French study by Embriaco et al. found a high level of emotional exhaustion in 19% of intensive care unit staff, high depersonalization in 37% and highly reduced professional accomplishment in 39% (7). A Belgian study of healthcare workers managing chronic patients with consciousness disorders reported that 33% showed moderate to severe emotional exhaustion, 36% showed moderate to severe depersonalization and only 3% presented low personal accomplishment (32).

Our study revealed that more than a half of nurses experienced high emotional exhaustion compared with physicians. Physicians had higher level of depersonalization than nurses and most of the physicians and nurses showed high reduced personal accomplishment. This is consistent with Gossery et al., who reported that nurses were more emotionally exhausted than physicians. However, the rates of depersonalization and reduced personal accomplishment were greater in nurses even though the difference was not statistically significant (32). On the other hand, Escriba-Aguir et al., in their study on emergency medical and nursing staff in Spain, found that the prevalence of emotional exhaustion and reduced professional accomplishment was higher among doctors than nurses (33). Nursing staff are most likely to develop burnout due to the nature of their job, with many tasks, greater proximity and time spent with patients and relatives, and the emotional demands of their work (34).

Rajeev and Rashmi Khanna in Rajasthan in India found that 29.2% of medical professional showed high levels of emotional exhaustion, 20.0% showed high depersonalization and 17.9% showed high reduced professional accomplishment (35). Among medical residents, Prins et al. found that rates of emotional exhaustion were 41–50% and depersonalization 34–70% (36), while in another study including nurses from different specialties, Sahraian et al. found reported rates of 23% for emotional exhaustion and 5% for depersonalization (34). In contrast, Abdulghafour et al. revealed that physicians in primary health-care centres in Kuwait had a relatively low mean percentage scores for emotional exhaustion and depersonalization, but they had high mean scores for personal accomplishment (8).

A great challenge encountered during emergency service is that the care of critical patients, such as undiagnosed cases, trauma patients with crush injuries and critical or dying patients, might lead to psychological depression in emergency service workers (9). Our study demonstrated a weak significant correlation between burnout and dealing with dying patients. Likewise, Poncet et al. (37) and Embriaco et al. (7) revealed that severe burnout was associated with end-of-life factors such as caring for dying patients.

Nurses in our study were more exposed to physical and verbal violence than were physicians. Kalemoglu and Keskin also demonstrated a high level of aggressive behaviour by patients and their companions in the emergency service. These aggressive acts might comprise personal threats or even use of weapons. This might complicate the safety of doctors, nurses and personnel taking care of patients and facilitate the development of burnout (9).

Multivariate analysis of variables affecting burnout in our study revealed that age, frequency of exposure to violence at work, years of experience, work burden, supervision and work activities were significant predictors of burnout syndrome among the study population. In Turkey, Demir et al. reported that problems with childcare were significantly associated with burnout among Turkish nurses (38). Lagerström et al. also reported work dissatisfaction, health threats and disequilibrium between family and work demands as the most important factors contributing to burnout among Iranian nurses (39).

A study on Cypriot physiotherapists in 2010 reported that regression analysis showed that the perception of stressful job, low salary, age group and employment sector predicted high burnout scores (14). Thomas and Valli in South Africa, reported that public hospital physicians had high levels of burnout syndrome and the main sources of stress were understaffing, lack of resources, difficult work schedules, inadequate job security and poor salaries. In addition, senior doctors showed lower job satisfaction (40).

The Australian Medical Association performed a health survey with 914 Australian and New Zealand junior doctors. Approximately 71% had low job satisfaction and 69% had burnout symptoms and half of them reported that their workload was excessive (30). Meanwhile, Lee et al. found that physician burnout was negatively associated with autonomy and positive work attitudes. It was positively associated with workload, constraining organizational structure, incivility, conflicts, violence, low quality and safety standards, negative work attitudes, work-life conflict and contributors to poor mental health (41).

One of the limitations of our study is that a cross-sectional study is not considered the ideal tool to study the causes of burnout syndrome.
Conclusion and recommendations

The present study in the emergency hospital of University of Tanta, Egypt concluded that about one-quarter of study nurses and physicians (26.8% and 22.6%) suffered from high levels of burnout syndrome. Age, frequency of exposure to violence at work, years of experience, work burden, supervision and work activities were significant predictors of burnout syndrome among the healthcare professionals studied. We recommend a longitudinal study to establish the causation of burnout syndrome; health education interventions during pre-employment training programmes for prevention of burnout syndrome; and periodic screening during work for early detection and management of burnout among health-care professionals.

Finding: None.

Competing interests: None declared.

References

33. Escribà-Agüir V, Martín-Baena D, Pérez-Hoyos S. Psychosocial work environment and burnout among emergency medical and nursing staff. Int Arch Occup Environ Health. 2006 Nov;80(2):127–33. PMID:16710712
Youth in crisis in the Middle East and North Africa: a systematic literature review and focused landscape analysis

M. Fehling,1 Z.M. Jarrah,1 M.E. Tiernan,1 S. Albezreh,1 M.J. VanRooyen,1,2 A. Alhokair1 and B.D. Nelson3,4

ABSTRACT Recent political and demographic factors have exposed the vulnerability of the youth in the Middle East and North Africa (MENA) region. This study aimed to elucidate the current needs, activities, stakeholders and solutions related to at-risk youth and young adults in the MENA region. A systematic literature review was conducted of the peer-reviewed and grey literature. This was complemented by an in-region landscape analysis involving key-informant interviews and focus group discussions. After extensive screening of 1160 unique articles, 275 articles were considered relevant to this study. Of these 275, 145 (52.7%) were related to health (64.8% of these related to mental health), 101 (36.7%) to livelihood, 87 (31.6%) to violence prevention and 68 (24.7%) to education. Important themes and challenges identified in the literature and discussions included the MENA region's growing youth bulge; youth unemployment; critical gender gaps; and the impact of conflict on livelihoods, education and health, especially mental health.

Jeunesse en crise au Moyen-Orient et en Afrique du Nord : examen systématique de la littérature et analyse contextuelle ciblée

RÉSUMÉ Des facteurs politiques et démographiques récents ont révélé la vulnérabilité des jeunes dans la Région du Moyen-Orient et de l’Afrique du Nord. La présente étude visait à connaître les besoins, les activités, les parties prenantes et les solutions liés aux jeunes et aux jeunes adultes à risque actuellement dans la Région du Moyen-Orient et de l’Afrique du Nord. Un examen systématique de la littérature revue par des pairs et de la littérature grise a été mené. Cette démarche a été complétée par une analyse contextuelle intrarégionale impliquant des entretiens avec des informateurs clés et des groupes de discussion thématiques. Après un examen approfondi de 1160 articles uniques, 275 articles ont été considérés comme pertinents pour l’étude. Sur ces 275 articles, 145 (52,7%) étaient liés à la santé (64,8% de ces derniers abordant la santé mentale), 101 (36,7%) aux moyens de subsistance, 87 (31,6%) à la prévention de la violence et 68 (24,7%) à l’éducation. Les difficultés et thèmes importants identifiés dans la littérature et les discussions au niveau de la Région du Moyen-Orient et de l’Afrique du Nord sont les suivants : l’augmentation rapide du nombre de jeunes, le chômage chez les jeunes, les écarts critiques entre les hommes et les femmes, et l’impact des conflits sur les moyens de subsistance, l’éducation et la santé, en particulier la santé mentale.
Introduction

Adolescence can be a time of great opportunities, as youth transition from childhood to adulthood and prepare for the responsibilities ahead, including their livelihood, family obligations and productive engagement with their communities. However, among the many communities in the Middle East and North Africa (MENA) that are disrupted by conflict or impoverishment, opportunities for youth can be severely limited. Recent political and demographic factors have exposed the vulnerability of many segments of the civilian population in the MENA region. These vulnerabilities are driven by the expansion of regional conflicts and mass population displacement in urban settings.

The population effects of political crises and disasters will create an increasingly significant impact on youth. Previously, adolescents and young adults have been a neglected population in international programming (1); however, this trend may be changing as youth increasingly become a priority for countries in the MENA region (2). Meanwhile, this population segment is growing more rapidly in the MENA region than almost anywhere else in the world (3). Lack of economic, educational and leadership opportunities curtail adolescent development and limit their full potential for contribution to their families and communities throughout their lifetimes. The results of such conditions during adolescence can lead to a sense of hopelessness and frustration, unnecessary idleness and a propensity for unrest.

In preparation for programmatic development of interventions for youth in the Middle East by the Harvard Humanitarian Initiative, Cambridge, Massachusetts, USA, we discovered no recent overview of the issues faced by youth in the MENA region. Our objective, therefore, was to conduct a multi-method landscape analysis to more fully elucidate the current needs, activities, stakeholders and solutions related to at-risk or conflict-affected youth and young adults in the MENA region.

Methods

To accomplish the study objective, a multi-method approach was used, involving a systematic review of the peer-reviewed literature, a review of the available grey literature, and in-region discussions with stakeholders and key informants in Jordan.

These reviews sought to systematically identify and assess current knowledge, gaps and existing best practices related to the needs of MENA youth in crisis. Jordan was selected for in-region discussions due to its current central position in many of the acute issues facing vulnerable youth and due to its relatively secure access for participants.

This study underwent ethical review and received exemption from the institutional review board of Partners Healthcare (Massachusetts General Hospital, Boston, Massachusetts). In-region visits and discussions in Jordan received permission from the Jordanian Ministry of the Interior.

Systematic literature review

Standardized PRISMA [preferred reporting items for systematic reviews and meta-analyses] guidelines were followed to conduct the systematic literature review (4). This involved surveying the peer-reviewed literature using the PubMed/Medline and Web of Science databases. Identified articles were iteratively screened for relevance regarding youth in crisis by article title, abstract and then full article. The bibliographies of included articles were also reviewed to identify additional relevant references.

Inclusion and exclusion criteria

The inclusion criteria (search terms) used in the literature searches were: (Youth OR adolescence OR adolescent OR teenager) AND (“Middle East” OR MENA OR “North Africa” OR Algeria OR Bahrain OR Egypt OR Iran OR Iraq OR Israel OR Jordan OR Kuwait OR Lebanon OR Yemen OR “United Arab Emirates” OR Libya OR Morocco OR Oman OR Palestine OR Qatar OR “Saudi Arabia” OR Syria OR Tunisia) AND (conflict OR refugee OR crisis OR vulnerable).

The exclusion criteria were articles unrelated to youth population or youth in crisis and articles referring to non-MENA countries. We also excluded articles about immigrants or refugees from MENA countries in non-MENA countries, due to the different context and different opportunities and challenges faced; however, this group needs to be addressed as another vulnerable group of adolescents.

Definitions

For the purpose of these reviews, the terms “adolescents” and “youth” were used interchangeably as their definitions and age ranges overlap among youth-focused organizations. For example, the World Health Organization defines youth as individuals 15–24 years of age, while the United Nations Children’s Fund (UNICEF) defines adolescents as age 10–19 and youth as age 15–24 years. However, in general, the primary focus was on individuals 15–24 years of age.

Grey literature search

In addition to searching the formal peer-reviewed databases, the so-called “grey” literature was surveyed, including online reports and other unpublished documents from nongovernmental organizations (NGOs), United Nations organizations, governments and ministries of health. For this grey literature review, we searched Google, Google Scholar and established humanitarian knowledge databases, such as ReliefWeb, and donor databases, such as the United States Agency for...
International Development’s Development Experience Clearinghouse. The same search terms were used as for the peer-reviewed literature.

**Stakeholder analysis and in-region discussions in Jordan**

The in-region research in Jordan took place from November to December 2014. Twelve different organizations were visited and interviewed. To guide the stakeholder discussions, semi-structured key-informant interviews and focus group discussions were used. The questions explored barriers, needs, solutions and priorities for vulnerable youth populations in the MENA.

The participating stakeholders were: United Nations High Commissioner for Refugees, UNICEF, International Youth Foundation, Save the Children, Mercy Corps, Norwegian Refugee Committee, International Rescue Committee, International Medical Corps, Microfund for Women, Jordanian Hashemite Fund for Human Development, Baqaa refugee camp youth centre, Za’atari Syrian refugee camp, Palestinian refugee youth, Syrian refugee youth, and Jordanian youth. These stakeholders and organizations were identified in our literature reviews and through snowball sampling as some of the key groups on the topic of MENA youth.

**Synthesis**

The selected peer-reviewed and grey literature articles as well as the findings of the in-region analysis were subsequently categorized into one or more of the four topic areas:

- livelihoods/economic challenges and opportunities;
- educational challenges and opportunities;
- health-related issues; and
- risk for violence and violence prevention.

**Results**

**Literature review**

The peer-reviewed and grey literature reviews initially identified 1160 unique articles (Figure 1). A careful screening of abstracts and full articles resulted in 275 articles that were considered relevant to this study, including 28 key articles with useful inputs for future projects to address youth in crisis (Table 1).

Of the 275 relevant articles, 101 (36.7%) were classified under the category livelihood, 68 (24.7%) under education, 87 (31.6%) under violence prevention and 145 (52.7%) under health; of the latter, 94 (64.8%) were related to mental health issues. Articles contributing to more than one category were accounted for in each.

Geographically, of the 275 included articles, the vast majority (158; 57.5%) referred to Palestine and Palestinian refugees in MENA countries. Peer-reviewed articles examined youth in a group of countries (65; 23.6%) or single countries, such as Lebanon (20; 7.3%), Jordan (15, 5.5%), Islamic Republic of Iran (9; 3.3%) and Iraq (8; 2.9%).

**Livelihoods**

*The youth bulge: business and employment*

Assaad and Roudi-Fahimi explained that the increase in the proportion of 15–24-year-olds in the total population in the MENA region—dubbed the “youth bulge”—combined with the sudden expansion in the overall population, has resulted in the most rapid growth in the number of young people in the MENA in history (3). This number is projected to peak at 100 million by 2035 and to decline slowly thereafter. However, the labour market is not expanding to accommodate this demographic shift, risking a negative impact on countries’ economies and societies. The authors argued that the mismatch between quality of labour supply and the requirements of labour markets can largely be tackled by improving the quality of education in the region (3).

In addition to the anticipated demographic shift, there are notable gender dynamics in MENA’s labour markets. Globally, the largest male–female gender gaps in unemployment rates among youth are found in the MENA region, accounting for an estimated 24.5% unemployed young males compared with 42.6% unemployed young females in 2012 (5).

**Identity, personality and attitude**

Refugee youth in this region have much in common according to Chatty, who included eight different MENA countries in his research (6). The author described how the desire to emigrate, to find work and send remittances back to their families is present among all refugee youth populations. Many young refugees link their refugee status both to a sense of exclusion from their original homelands and to marginality from full legal, social and civil participation in the host communities. Opportunism and agency—seeking an education while also committing to helping the family—was similarly highlighted by refugee youth. Despite economic and political challenges, they looked to the future with optimism (6).

A UNICEF report from 2011 described two common elements that characterize Arab youths identities and influence their vision and priorities: family and religion. In a regional survey, 68% of young respondents said that religion defined them as a person. A survey in Jordan showed that two-thirds of respondents felt that achieving success in life depended on the status of their family in society, rather than on their own efforts (7). Fergus and Zimmerman posited that parental factors such as support, monitoring and communication skills are critical resources for youth to create resilience. Resilience describes the “process of overcoming the negative effects of risk exposure, coping
successfully with traumatic experiences, and avoiding the negative trajectories associated with risks (8).

**Migration**

A general lack of job opportunities results in a growing number of the youth in Arab countries adopting labour migration as a livelihood strategy. Most Arabs who emigrate are under 35 years of age, and 50% are under 25 years. Fargues described four main factors that contribute to youth emigration from the region: the increasing youth population in the Middle East; the growing number of young well-educated workers facing poor employment conditions; population density; and unresolved political conflicts (9).

The Silatech Index report in 2010 noted that 30% of youth aged 15–29 years would migrate permanently to another country given the opportunity, in particular "those who are the most educated, are already employed, and aspire to start their own businesses" (10).

**Education**

The importance of education in surmounting barriers in conflict environments is highlighted in various studies (11–14). According to Assad and Roudi-Fahimi, primary education is reaching universal levels of coverage of the population in countries of the Middle East (3). Access to secondary and higher education is limited, however.
<table>
<thead>
<tr>
<th>Author(s); citation</th>
<th>Year</th>
<th>Country/region</th>
<th>Study design</th>
<th>Target group/subject</th>
<th>Key themes and findings</th>
<th>Implications and solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afifi RA et al. (5)</td>
<td>2011</td>
<td>Lebanon</td>
<td>Community-based participatory research</td>
<td>Mental health in adolescents</td>
<td>Using community-based participatory research to develop mental health interventions ensures greater feasibility and sustainability of solutions</td>
<td>Engage directly with the community when identifying problems and possible interventions for mental health outcomes.</td>
</tr>
<tr>
<td>Al-Bahrani M et al. (25)</td>
<td>2013</td>
<td>Oman</td>
<td>Cross-sectional study</td>
<td>Adolescents’ coping styles</td>
<td>Adolescents with high levels of perceived problems had higher maladaptive coping styles than those with low-level problems. Females were more likely to use maladaptive coping styles than males.</td>
<td>Focus on strategies to enhance adaptive coping styles (e.g., seeking social and spiritual support, focusing on positive thinking, etc.).</td>
</tr>
<tr>
<td>Barber BK (53)</td>
<td>2008</td>
<td>Bosnia, Palestine</td>
<td>Cross-sectional study</td>
<td>Adolescents’ coping styles</td>
<td>Adolescents’ experiences in conflict can vary considerably in terms of perception: the logic and legitimacy of the conflict, the roles they play in it, and the ways they incorporate their experiences into their personal and social development.</td>
<td>When researching conflict, improve and broaden assessments of conflict and adaptive functioning by incorporating cultural differences. Focus on strategies to enhance adaptive coping styles (e.g., seeking social and spiritual support, focusing on positive thinking, etc.).</td>
</tr>
<tr>
<td>De Jong JT et al. (54)</td>
<td>2003</td>
<td>Algeria, Cambodia, Ethiopia, Palestine</td>
<td>Epidemiological survey</td>
<td>Post-conflict mental health</td>
<td>An association was found between the range of prevalence rates of PTSD and the diversity of risk factors for PTSD in different post-conflict countries.</td>
<td>Public mental health programmes need to consider that symptoms of PTSD and the trajectory of risk for PTSD vary in different post-conflict countries.</td>
</tr>
<tr>
<td>Dimitry L (55)</td>
<td>2012</td>
<td>Middle East</td>
<td>Systematic review (71 papers)</td>
<td>Mental health in conflict youth</td>
<td>Children in conflict zones are exposed to high levels of traumatic experiences. The number of confederate-related traumas correlates positively with PTSD and mental health issues.</td>
<td>Engage youth mentors as “agents of change” in refugee/conflict settings.</td>
</tr>
<tr>
<td>Persike M, Seiffge-Krenke I (56)</td>
<td>2014</td>
<td>Global (21 countries)</td>
<td>Cross-sectional study</td>
<td>Adolescents’ perceptions of stress</td>
<td>The highest parent-related stress among youth was in southern Europe, Latin America, Middle East, and Asia. Stress due to relationships with peers was higher than stress due to relationships with parents.</td>
<td>Public mental health programmes need to consider that symptoms of PTSD and the trajectory of risk for PTSD vary in different post-conflict countries. Engage youth mentors as “agents of change” in refugee/conflict settings.</td>
</tr>
<tr>
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<tr>
<td>Rhiger M et al. (57)</td>
<td>2008</td>
<td>Israel</td>
<td>Cross-sectional study</td>
<td>Youth exposure to trauma</td>
<td>A high prevalence of exposure to trauma was identified among Israeli youth (85% of students reported exposure), but incidence of war or conflict events was not significantly linked to trauma symptomatology</td>
<td>Awareness is needed of the “functional adaptation” of youth with long-standing exposure to conflict (e.g. exposure to attacks), resulting in increased community cohesion and social support</td>
</tr>
<tr>
<td>Sagy S et al. (58)</td>
<td>2002</td>
<td>Palestine and Israel</td>
<td>Observational study (longitudinal study of 2 groups)</td>
<td>Social knowledge and empathy among youth in conflict</td>
<td>Low levels of empathy and high levels of anger existed between Israeli/Palestinian adolescents. Historical interpretations and future expectations were expressed through the societal lens</td>
<td>Coexistence between the 2 nations needs to be based on mutual recognition of the narrative and legitimacy of each side</td>
</tr>
<tr>
<td>Sagy S, Adwan S (59)</td>
<td>2006</td>
<td>Palestine and Israel</td>
<td>Observational study (longitudinal study of 2 groups)</td>
<td>Hope among youth in conflict</td>
<td>Despite evidence of collectivism in Israeli and Palestinian societies, youth gave priority to individualistic hope over hope for others</td>
<td>Find ways to harness individual hope for adolescents in conflict areas, and build on existing hope for the collective good</td>
</tr>
<tr>
<td>Shaar KH (60)</td>
<td>2013</td>
<td>Lebanon</td>
<td>Systematic review (11 papers)</td>
<td>Trauma in adolescents in conflict</td>
<td>Prevalence of PTSD in Lebanese adolescents has increased over time, with each conflict: from 8.5%-14.7% for the civil war, 21.6% for the Grapes of Wrath War, and 15.4%-35.0% for the 2006 July War.</td>
<td>Provision of counselling and treatment services at school and community level could ameliorate the consequences of war for vulnerable populations</td>
</tr>
<tr>
<td>UNICEF (61)</td>
<td>2011</td>
<td>Middle East / North Africa</td>
<td>Programme evaluation</td>
<td>Evaluation of programme for youth and adolescents</td>
<td>Young people in MENA feel marginalized politically, economically and socially</td>
<td>With the right support, the strong appetite for change that currently exists in the region can be harnessed in a positive direction both for adolescents and youth as individuals</td>
</tr>
<tr>
<td>WHO (62)</td>
<td>2010</td>
<td>Global</td>
<td>Briefing report</td>
<td>Violence prevention in youth</td>
<td>Preschool enrichment and social development programmes are associated with reduced aggressive behaviour and violent crime in childhood and later life</td>
<td>Life skills interventions are used throughout the world to improve young people's life chances through increasing educational participation</td>
</tr>
</tbody>
</table>

**Migration**

<table>
<thead>
<tr>
<th>Author(s); citation</th>
<th>Year</th>
<th>Country/region</th>
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<th>Target group / subject</th>
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<th>Implications and solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chatty D (6)</td>
<td>2007</td>
<td>Middle East</td>
<td>Community-based participatory research</td>
<td>Youth living in prolonged migration</td>
<td>Obtaining refugee status was linked to marginality and exclusion in the original homeland. Multiple conflicting identities were present among refugee youth</td>
<td>Refugee youth highlighted opportunism and agency as key factors: seeking education, wage labour or self-employment while contributing to their families</td>
</tr>
</tbody>
</table>
Table 1 Summary of key articles selected to review current needs, activities, stakeholders and solutions related to at-risk youth and young adults in the Middle East and North Africa (MENA) region (continued)

<table>
<thead>
<tr>
<th>Author(s); citation</th>
<th>Year</th>
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<th>Implications and solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fargues P (63)</td>
<td>2008</td>
<td>Middle East / North Africa</td>
<td>Analytical report</td>
<td>MENA demographic and migration patterns</td>
<td>Main triggers of migration from MENA to Europe are: youth bulge; lack of opportunities in home countries; untenable population density; unresolved conflicts</td>
<td>MENA's economic and demographic circumstances make it a promising source of flows to Europe, particularly circular-migration flows</td>
</tr>
<tr>
<td>Tober DM et al. (31)</td>
<td>2006</td>
<td>Islamic Republic of Iran and Afghanistan</td>
<td>Ethnographic study, including interviews and observations</td>
<td>Family planning uptake in refugee populations</td>
<td>Islamic Republic of Iran's family planning programme has been successful with the Iranian population but less so with Afghan refugee population. Afghans were marginalized due to cultural differences and were less likely to use family planning</td>
<td>Experience of losing children to war and sickness results in refugees wanting to have larger families. Family planning programmes must take this into account, while taking account of cultural and religious sensitivities</td>
</tr>
<tr>
<td>Assaad R, Roudi-Fahimi F (3)</td>
<td>2007</td>
<td>Middle East / North Africa</td>
<td>Ecological study/ expert opinion</td>
<td>Youth employment potential</td>
<td>MENA countries have diverse economies and populations. Strengthening human capacity among youth cannot succeed without fundamental reforms</td>
<td>Adopt development policies that realign economies in 3 ways: reinvent the private sector; integrate with the world economy; and manage oil resources better</td>
</tr>
<tr>
<td>Bricker NQ, Foley MC (42)</td>
<td>2013</td>
<td>Middle East</td>
<td>Ecological study</td>
<td>Youth, violence and the labour market</td>
<td>The Youth Risk Factor (ratio of youth population to total labour force) can be used to predict where conflict may emerge next. Emphasis is needed on the importance of labour market reforms. Improving access and quality of education did not always lead to reduced risk of conflict</td>
<td>Subsidize and invest in apprenticeships, trade schools and internships to make transition into the labour force more gradual and less frustrating for youth</td>
</tr>
<tr>
<td>ILO (64)</td>
<td>2013</td>
<td>Global</td>
<td>Analytical report</td>
<td>Global employment trends for youth</td>
<td>Middle East has the highest youth unemployment rate (28.3% in 2012, projected to increase to 30.0% in 2018). More than 1 in 4 economically active young people are unemployed</td>
<td>Five key areas were identified: employment and economic policies; education and training; labour market policies; entrepreneurship and self-employment; and labour rights that are based on international standards</td>
</tr>
<tr>
<td>Ortiz I, Cummins M (65)</td>
<td>2012</td>
<td>Global</td>
<td>Policy analysis</td>
<td>Employment crisis due to &quot;youth bulge&quot;</td>
<td>Lack of employment opportunities for young persons, aggravated by the youth bulge, should be a primary concern for policy-makers</td>
<td>Employment should be generated through: macroeconomic and sector policies; active labour market policies and programmes; labour standards; social protection and dialogue</td>
</tr>
<tr>
<td>Author(s); citation</td>
<td>Year</td>
<td>Country/region</td>
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<tr>
<td>Thabet AA et al. (66)</td>
<td>2011</td>
<td>Palestine</td>
<td>Cross-sectional study</td>
<td>Labour and mental issues in youth</td>
<td>Children worked an average of 6.8 h a day and only 37% had adequate rest. Poor mental health was predicted by socioeconomic determinants and factors relating to under-age employment</td>
<td>Policy, legislation and preventive programmes from statutory and voluntary agencies should adopt an integrated approach to meeting children’s mental health needs</td>
</tr>
<tr>
<td>Urdal H (41)</td>
<td>2006</td>
<td>Global</td>
<td>Ecological study</td>
<td>“Youth bulges” and violence</td>
<td>Youth bulges provide greater opportunity for violence through abundant supply of youth with low opportunity cost, and are associated with a risk of internal armed conflict</td>
<td>Economic structural factors need to be in place to realize opportunities for economic bonuses from the large youth cohorts entering the job market</td>
</tr>
</tbody>
</table>

**Education, resilience, and functioning in youth in conflict**

<table>
<thead>
<tr>
<th>Author(s); citation</th>
<th>Year</th>
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<tbody>
<tr>
<td>Buckner E, Kim P (67)</td>
<td>2012</td>
<td>Palestine</td>
<td>Experimental Study</td>
<td>Conflict and education in adolescents</td>
<td>Higher conflict exposure was equated with lower levels of executive functioning in adolescents. Living in an urban environment was a strong predictor of executive functioning and mental planning performance in this population.</td>
<td>Use mobile technologies as a versatile learning and assessment resource for children in conflict, to encourage problem solving, strategic planning, creativity and critical reasoning</td>
</tr>
<tr>
<td>Fergus S, Zimmerman MA (8)</td>
<td>2005</td>
<td>Global</td>
<td>Expert opinion</td>
<td>Theoretical frameworks for development of adolescents in conflict</td>
<td>Resilience models were used to understand why some youth exposed to risk were able to avoid negative outcomes. Parental factors are consistent, critical resources for youth</td>
<td>Public health interventions that use a resilience approach need to pay particular attention to the unique features of the population of interest and the context in which the approach is employed</td>
</tr>
<tr>
<td>Parkinson S (15)</td>
<td>2014</td>
<td>Syria, Lebanon</td>
<td>Descriptive report</td>
<td>Education for Syrian refugees in Lebanon</td>
<td>Educational exclusion has a profound impact on refugees from Syrian Arab Republic, denying benefits and exposing children to further risks. Literacy rates have dropped dramatically from 83.6% in 2008</td>
<td>Financial and administrative hurdles to education (e.g. getting previous report cards officially stamped, paying for permits, etc.) need to be reduced</td>
</tr>
<tr>
<td>Soltanifar M (68)</td>
<td>2011</td>
<td>Middle East</td>
<td>Expert opinion</td>
<td>Theoretical framework for youth education and fundamentalism</td>
<td>Answering why youth join fundamentalist groups, and what role education plays, are complex issues that require more study. Political, cultural, religious and educational nuances need to be taken into account</td>
<td>Studies should take into account the differing methods of communication between political structures, and the existence of both formal and informal educational systems</td>
</tr>
</tbody>
</table>
The educational situation for Syrian youth has changed dramatically in recent years; Syrian refugees in Lebanon face social, economic and bureaucratic obstacles resulting in dropout rates from Lebanese public schools of approximately 70% (15).

Even though new media could play an important role in education, only 62% of Arab youth aged 15–29 years have Internet access in their community and just 22% have access at home (10).

Health
Mental health
The vast majority of health-related articles identified for this review describe an increased prevalence of post-traumatic stress disorder and/or depression through conflict and political violence on youth (16–20). Even if boys are equally, or often more, exposed to trauma—due to boys in the region spending more time outside the house than girls—girls appear to have a higher prevalence of post-traumatic stress disorder, depression, separation anxiety and psychological symptoms than boys. In contrast, boys have more behavioural problems than girls and are more likely to exhibit aggression and hyperactivity (21). Other articles confirm the higher prevalence of mental health issues in female youth in crisis (22–24).

These mental health issues can have further negative impacts on young people’s lives, such as increased risk of substance abuse and use of maladaptive coping mechanisms (self-blame, crying, ignoring the problem, wishful thinking, hiding feelings and anxious anticipation) (25,26).

Thabet et al. described the mental health impact of child labour (< 18 years old) on conflict-affected adolescents who seek early employment to support their family. The findings indicate that these adolescents present with a range of inter-related emotional and behavioural difficulties. The authors recommended human rights-based policies and legislation to tackle the problem, as well as creating incentives for adolescents to return to education (20).

Health in refugee camps and women’s health
Khawaja et al. estimated that 80% of refugee camp populations in Lebanon consist of children, adolescent girls and women. As camps become increasingly militarized, women and girls are particularly at risk of rape and domestic violence. More than a quarter of the women interviewed reported having forced sexual intercourse over the past year (27,28).

Living in an environment of political and social violence also increases the odds of intimate-partner violence occurring (29). In some MENA countries, cultural beliefs and traditions may act as a barrier for women to seek health care, in particular regarding intimate-partner violence. Spencer et al. noted that women in Jordan usually use familial institutions to seek help and would only seek help outside of the family in serious circumstances after the familial help had proven ineffective (30).

The Islamic Republic of Iran has one of the most successful family planning programmes in the developing world and is often considered a potential model for other Muslim countries (31). However, not all family planning programmes are readily accepted throughout the Muslim world. A study on Afghan refugee women who did not use the Iranian programme showed that only after subsidizing general health care did the use of contraceptives increase (32).

Other articles describe the increase of infectious diseases in youth, such as diarrhoeal illness and upper respiratory tract infections, due to the poor living and housing conditions in refugee camps (33–36). War-related injuries of children and youth are also discussed in the literature (37–40). A study on mostly terror-related mass casualty
events in Israel between 1998 and 2007 showed that severe injuries were significantly more frequent among children injured in mass-casualty events compared with non-mass-casualty events (39). Another study on injuries from explosive incidents related to terrorism describes the adolescent injury profile as being similar to that of adults but involving fewer internal injuries and more contusions as well as superficial extremity wounds that were more likely to require surgery (40).

**Risk of violence and need for violence prevention**

According to Urdal, there is an association between youth bulges and the risk of violence in countries (41). The author argued that countries that experience youth bulges are more likely to experience political violence than countries that do not; the higher the dependency burden (i.e. of youth not working), the greater the effect of youth bulges on political violence in terms of riots and violent demonstrations; and the lower the rate of economic growth, the greater the risk of terrorist acts by youth.

Underlining the associated risks of youth unemployment and conflict, Bricker and Foley used countries’ youth population employment statistics to predict the emergence of conflict. They developed the Youth Risk Factor—the ratio of the 17-to-26-year-old age cohort to the size of the total labour force—and showed that countries in the Middle East such as Jordan and Algeria are particularly at risk (42). The authors concluded that a successful transition of youth into the labour force, regardless of their educational backgrounds, is essential to prevent conflict.

Furthermore, the restricted conditions for youth in refugee camps, such as limitations on employment or mobility, can lead to severe consequences, especially when unequal opportunities compared with local youth are perceived. These consequences include illegal activities outside of camps, dropping out of school, physical abuse, child labour and substance abuse (43). While adolescent girls are prone to sexual and gender-based violence, young adolescent boys are particularly vulnerable to being arrested and detained by the authorities in conflict zones (9).

Based on the grey literature review, a number of recommendations and lessons learned for implementing youth in-conflict programmes in the MENA region were identified (44–49). These are summarized in Table 2 under the following themes:

- adopt a holistic approach;
- engage policy-makers and regulatory agents for a collaborative, interdisciplinary approach;

<table>
<thead>
<tr>
<th>Theme</th>
<th>Recommendations/lessons learned</th>
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| **Adopt a holistic approach** | • Engage youth, their peers and their families in a culturally appropriate way  
• In addition to economic self-reliance, provide skills in leadership, teamwork, communication and social responsibility  
• Add youth training, preparation and counselling to microfinance programmes (22)  
• Coach, mentor and synergize with successful programmes led by the business community in West Bank (23) and Iraq (24) |
| **Engage policy-makers and regulatory agents for a collaborative, interdisciplinary approach** | • Successful and sustainable programming requires strong political support and an enabling regulatory environment in a country  
• Collaboration is needed between nongovernmental organizations, ministries, local partners and population  
• High level of youth engagement needs to be met with high efficacy to prevent frustration among youth  
• Youth work initiatives highlight importance of engaged regulatory environment for policy (23) and partnering with policy-makers (26) |
| **Emphasize interventions for female youth** | • Awareness of gender issues is critical for youth programming, both in design and evaluation  
• Focus is needed on women, particularly in conflict situations  
• Females should receive tailored materials and training so as not to be selected out of youth programmes (27) |
| **Plan for transition to ensure sustainability** | • Go beyond serving immediate needs and prepare youth for adult lives  
• Foster cooperative relationships with larger, permanent institutions in the community (28)  
• Include technical and vocational skills for youth in the transition period out of conflict  
• Align educational programmes with job availabilities  
• Brain drain can only be reversed by building opportunities for youth to participate productively in their communities |
• emphasize interventions for female youth; and
• plan for transition to ensure sustainability.

Coping and resilience
Various articles describe coping mechanisms and the construct of resilience by Palestinian youth, a population that has been at risk of violence and conflict for many years. Nguyen-Gillham et al. confirmed previous studies by showing the value of supportive relationships such as families and friends for coping with conflict. The authors added, “Political participation and education are vital to a sense of identity and political resistance” (50).

Other research has assessed and underlined the increasing importance of participatory educational approaches in school and communities in order to overcome barriers due to conflict, culture and gender (11–14). Morray and Liang pointed out the success of a group intervention for Palestinian and Israeli youth to promote communication and healing and encourage otherwise untenable communication between groups in conflict (51).

Current situation, stakeholder analysis and in-region discussions in Jordan
The in-region discussions revealed multiple challenges for Jordan’s refugees. The stakeholders involved and key points of the discussions, summarized under the four themes of this review, are described in Table 3.

Refugee numbers, particularly from neighbouring Syria, are high and expected to increase in Jordan further by 200,000 this year to more than one million by December 2015. Approximately 20% of Syrian refugees in Jordan live in two official refugee camps (52). Inside the camps, refugees have access to World Food Programme food, health care and education. Outside of the camps, however, the support for refugees is more precarious, with most refugees relying heavily on the cash transfer programmes of the United Nations High Commissioner for Refugees or other NGOs, as the vast majority of refugees are prohibited from working. Syrian youth articulated their frustration with the lack of economic opportunities matching their educational qualifications. Syrian youth often fled to Jordan without their transcripts and diplomas, making it difficult to prove their educational credentials.

In addition to the barriers to employment, assistance provided to refugees is decreasing or in danger of being

<table>
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<tr>
<th>Criteria</th>
<th>Results</th>
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</table>
| Livelihoods    | • Refugees spend most of their cash transfers on rent  
• The vast majority of refugees are prohibited from working, with the Jordanian government citing economic, political and security concerns  
• Livelihood interventions are numerous in Jordan, with nongovernmental organizations providing many vocational training programmes inside and outside of the camps, from computer training to welding instruction for both Jordanians and refugees  
• Few Syrians are allowed to participate in these vocational programmes outside of the camps  
• Microfinance programmes are largely limited to Jordanians  
• Refugees are enduring increasing strain and turning towards negative coping mechanisms, including child labour, child marriage and survival sex  
• Jordanian government wants to decrease the number of Syrian refugees in the country, in particular outside of established camps. Consolidating all refugees into the camps will likely place even greater pressure on existing resources |
| Education      | • Most Syrian students lack their transcripts or diplomas from the home country, making it difficult to prove their education level  
• There is an overall sense of hopelessness regarding the lack of employment opportunities for Syrians  
• Students were enthusiastic about scholarship opportunities for university education  
• Popular subject areas for training included English, computer literacy and nursing  
• Many Jordanian youth felt that there was a mismatch between curricula offered in universities and the needs of the labour market |
| Health         | • As of November 2014, the Jordanian government stopped providing free health care to refugees outside of camps  
• Much of the health support discussed for refugees in the camps centred on psychosocial care and gender-based violence |
| Violence prevention | • UNICEF and the Ministry of Education provide a successful peace-building programme called Madrasati (“my school”) where refugee and Jordanian students learn and interact with one another  
• Peer activities in Palestinian and Jordanian youth centres increase interaction and help youth understand each other’s challenges of daily living |

cut, with health care outside the camps no longer available free-of-charge and the World Food Programme food assistance programme nearly cancelled in December 2014.

The increasing numbers of refugees could put an even greater pressure on the resources provided by the international community. Several organizations noted the increasing strain that refugees were enduring, stating that refugees were turning towards negative coping mechanisms that specifically affect refugee youth, including child labour, child marriage and survival sex.

**Discussion**

This multi-method analysis has sought to discern current needs and evidence-based solutions for the challenges faced by youth in crisis in the MENA region. The lack of interdisciplinary, cross-cultural research and policy analysis is one barrier to understanding what factors are associated with increased vulnerability of youth and adolescents and how best to address young peoples’ needs. Few peer-reviewed articles have focussed on programmes providing political, social and economic opportunities to youth in crisis.

Recent worsening of the conflicts in the MENA region and the resulting flows of refugee and internally displaced people make addressing youth in crisis all the more urgent. The present youth bulge, and its expected growth, risks exacerbating challenges such as the general lack of quality education and of employment, which result in high rates of youth unemployment. Guaranteeing better education and stimulating employment not only can help in the short-term but might actually create a platform for entrepreneurship and creation of further employment. Indeed, the discussions with Jordanian, Palestinian and Syrian youth — regardless of gender — revealed both a desire for further education and a frustration with the mismatch between the educational system and the labour market. The literature suggests that a great number of young people in crisis situations are at risk of involvement in violence and conflict. This risk can be mitigated through education and employment opportunities as well as social networks of friends, family and peer groups that help create resilience. Our own programming at the Harvard Humanitarian Initiative will centre on offering educational and livelihood opportunities for MENA youth, while anticipating and evaluating a positive secondary impact on youth health and violence prevention.

The literature review and in-region discussions supported the idea of civic engagement of youth as an important driver for business development in the MENA region, but also noted some barriers, including legal challenges for work permits and accreditation of education as well as limited access to new media and the Internet.

The in-region discussions demonstrated that communities, from the local to the international, are responding to the needs of youth populations through education and livelihood programmes, such as cash transfers and microfinance. However, the impact of these interventions is limited as a result of scarce employment opportunities and the legal restrictions on refugees. This underscores the importance of civil society and local government collaboration in the MENA. Labour migration has become a key livelihood strategy for youth in the region and thus designing educational programmes that can lead to opportunities for subsequent employment is important to consider.

It is often particularly difficult for women in the region to contribute to the economic health of the family, as evidenced by the large employment gender gap. Therefore, families’ investment in education is likely to focus more on the male child when opportunities are more evident. Interventions for youth should therefore reflect these realities and provide opportunities for the most vulnerable and most in need, including young women, while considering religious aspects and understanding the importance and value of the local culture.

The special needs of refugee youth also need to be taken into account, as the inequalities in work opportunities between refugee youth and local youth cause tensions that exacerbate the already higher risk of refugee youth being subject to violence, abuse and detainment.

Health interventions should have a strong focus on mental health issues since they seem to be the predominant health concern for youth in conflict zones, for refugees and for women in particular, a finding supported by the literature search results and the regional stakeholder analysis. However, addressing conflict-related mental diseases requires an interdisciplinary approach with a strong involvement of family and community. This involvement was found to be a key theme for all programmes, whether focusing on livelihood, education, health or violence prevention.

Regarding the limitations of this study, the literature search component only summarized the findings from English-language articles. Additionally, there was a relatively high proportion of health-related articles, likely due to the use of the medical literature database PubMed, and, therefore, the topic of health may be over-represented in the quantification of the literature results. Lastly, in-region discussions were meant to provide additional context, obtain feedback from stakeholders on the initial literature findings and to explore specific issues. The in-region discussions were, by design, limited to Jordan, because it provides a current cross-section of issues related to at-risk youth in the MENA region.
Conclusion

This multi-method analysis has revealed the major challenges in the areas of livelihood, education, health and risk of violence for young people in crisis in MENA countries affected by short- and long-term conflicts. The literature review as well as the in-region research highlights the importance of emphasizing education that leads to employment opportunities for a better and more peaceful future for young people in the MENA and subsequently for the region’s populations in general. In order to create locally accepted and efficient interventions with sustainable impact, it is essential to understand the intentions and barriers for all stakeholders involved, the local political and cultural environments, and, most importantly, the needs of vulnerable youth populations.

Finding: None.

Competing interests: None declared.

References


25. Al-Bahrani M, Aldhafri S, Alkharusi H, Kazem A, Alzubiadi A. Age and gender differences in coping style across various political and cultural environments, and, most importantly, the needs of vulnerable youth populations.

Finding: None.

Competing interests: None declared.


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Finding: None.

Competing interests: None declared.


WHO events addressing public health priorities

Introduction

The global burden of noncommunicable diseases constitutes one of the major challenges for development, undermining social and economic progress and threatening the achievement of internationally-agreed development goals. These diseases are now the world’s biggest killers and are a leading cause of death in the Eastern Mediterranean Region, and yet many of these deaths could be prevented through simple lifestyle-related changes and cost-effective interventions implemented by national governments. In our Region, for all noncommunicable diseases:

- 2.2 million lives are lost annually
- 51% of lives lost are premature, i.e. before 70 years old
- 65% of deaths are linked to risk factors

Background

In September 2011, the General Assembly of the UN adopted a Political Declaration1 to address the prevention and control of noncommunicable diseases worldwide, with a focus on developmental and other challenges and social and economic impacts, particularly for developing countries.

In this context, the WHO Regional Office for the Eastern Mediterranean organized the first annual regional meeting on the prevention and control of noncommunicable diseases and risk factors in Kuwait in April 2013. One of the outcomes was the Kuwait Call for Action2, in which Member States reaffirmed their commitment to scale-up the prevention and control of noncommunicable diseases including the key strategic interventions outlined in the regional framework for action3. The second annual regional meeting was held in Cairo in April 2014, to further develop the ongoing work in the Region related to prevention and control of noncommunicable diseases.

Third annual regional meeting on the prevention and control of noncommunicable diseases and risk factors

Following on from these events, the third annual regional meeting was held in 2015, organized in two rounds, the first in Cairo in April and the second in Beirut in June. The specific objectives of the meeting were to:

- review the progress in implementing the key strategic interventions in the updated regional framework for action, guided by the process indicators included in the framework;
- review challenges faced by Member States in implementing the strategic interventions and agree on the technical support needed from WHO;
- agree on the way forward for implementing priority country actions.

Representatives from 20 countries of the Region attended and included national managers of noncommunicable disease programmes and focal points for tobacco control, physical activity, nutrition, surveillance and noncommunicable disease management, supported by international and regional experts.

Prevention and reduction of risk factors

Key challenges in the Region include tobacco control, high salt and fat intake and marketing of food and non-alcoholic beverages to children.

Given the special needs for tobacco control, it is of great importance for the health sector to become more familiar with taxation and economic/trade issues related to tobacco in order to “speak in a language” that policy-makers and others will understand.

The average salt intake in the Region is > 10 g/person/day, i.e. more than double the WHO-recommended level. Bread, cheese and composite dishes are the major sources. Trans-fat and saturated fat intake is rising: nearly half of the countries have fat intakes at or above the reported world average (81.8 g/person/day). The use of low-priced palm oil, which is high in saturated fatty acids, is also rising; the subsidy for palm oil which is applied in several countries is contributing to this increase in use.

Key challenges related to marketing of food and non-alcoholic beverages to children include celebrity recruitment,
increased sponsorship, increased expenditure and limited policies and legislation.

Several countries in the Region have initiated actions with promising results, showing that effective multisectoral actions that have a potentially important impact on population health are feasible. Major activities undertaken include: revising national standards for levels of salt in processed and ready-to-eat food; encouraging food processors to produce low-fat, low-sugar and low-salt foods; expanding/strengthening nutritional labelling laws and regulations; alerting consumers on the salt content of food through labelling; sensitizing food processors, technical, health and agriculture personnel and schoolteachers to the nutrition content of foods; providing nutrition education through the media and the health service delivery system; and cutting the salt content of bread. In regard to marketing of food and non-alcoholic beverages to children, the Islamic Republic of Iran has an advanced regulatory framework covering both children and adolescents.

**Box 1 Recommendations**

**To Member States**

1. In the area of governance: implement the commitments of the 2011 United Nations Political Declaration and the time-bound commitments of the 2014 United Nations General Assembly review meeting, guided by the regional framework for action, and prepare for the comprehensive review and assessment at the next review meeting of the United Nations General Assembly in 2018.

2. In the area of prevention and reduction of risk factors: implement the “best buy” preventive interventions to deal with high-burden risk factors (e.g. tobacco use, unhealthy diet and physical inactivity) in order to meet the global monitoring framework targets.

3. In the area of surveillance: strengthen noncommunicable disease surveillance through capacity-building and setting national targets for 2025.

4. In the area of health care: ensure continuity of care by focusing on strengthening the integration and management of noncommunicable diseases within primary health care. Screening and early detection programmes should be embedded into primary health care systems.

**To WHO**

1. In the area of governance: modify the 17 process indicators to enhance their synergy with the 10 global progress indicators designed to facilitate monitoring and reporting on Member States commitments by 2018.

2. Continue to raise political commitment and consider best approaches to mobilize resources for noncommunicable diseases in low-income countries and establish a regional noncommunicable disease network and periodic noncommunicable disease newsletter.

3. Continue to build national capacity for the noncommunicable disease team to enhance national capacity and contributions.

4. Scale up the work at country level, including through strengthening the role of WHO Representatives in advocacy, in raising commitment to prevention and control of noncommunicable diseases.

5. In the area of prevention and reduction of risk factors: support implementation of the “best buys” together with other public health initiatives which can have short-term to medium-term impact in most countries. Examples include reducing salt intake, restricting certain food imports such as those with high trans-fat content, and implementing tobacco reduction measures.

6. In the area of surveillance: enhance the capacity of Member States for noncommunicable disease surveillance, based on the three pillars of surveillance (risk factors and determinants, morbidity/mortality, and health system response).

7. Strengthen cancer registries and cancer reporting to include factors such as the incidence of cancer, type of cancer and staging of cancer, which will contribute to the improvement of cause-specific mortality as part of health information system development.

8. In the area of health care: lead the development of guidance/tools to support countries to strengthen noncommunicable disease integration into primary health care to achieve health care targets.
Broadcast advertising of soft drinks has been prohibited since 2004, and in 2014 the Health Ministry prepared a list of food items to be prohibited from advertising.

There is also a clear need to scale up action in the area of physical activity. The examples set by Oman and Kuwait in developing action plans and community-based projects for physical activity show good practice and could be replicated in other countries. A number of countries in the Region already have a specific policy or national strategy on the promotion of healthy lifestyles addressing both nutrition and physical activity.

**Surveillance, monitoring and evaluation**

Significant progress in noncommunicable disease prevention and control requires strengthening the surveillance system. There is a need to invest in strengthening national noncommunicable disease surveillance systems, focusing on: exposure, outcome, and health system response. The experience of Tunisia in implementing the health examination survey was cited as a good practice, which could be replicated in other countries.

**Health care**

WHO’s position is to use the total risk approach for prevention and control of cardiovascular disease (TRAC) to aid in the prevention of heart attacks and strokes. There is however a need to establish standard key performance indicators for the implementation of TRAC in the Region. In order to achieve proper implementation, a regular sustainable supply of essential medicines for noncommunicable diseases needs to be in place. There is a need for cost-effective, evidence-based guidelines on the management of noncommunicable diseases.

**Unopposed marketing initiative**

The Region is exposed to aggressive marketing and unopposed commercial practices that promote unhealthy products, particularly those targeting children. The WHO has launched an initiative to protect public health and promote healthy lifestyles, with a special focus on countering commercial practices that promote unhealthy products, particularly those targeting children. The initiative builds on existing work in areas of prevention and control of tobacco use, Code of Marketing of Breast Milk Substitutes, WHO recommendations on marketing of foods and nonalcoholic beverages to children, measures for salt and fat reduction and the development of legislative provisions. The concept of the “the three CCs” (counter action, critical capacity, containment) can be adapted by each country to take action.

**Next steps**

The recommendations that came out from the meeting are shown in Box 1.
Tobacco use: achieving the global target of 30% reduction by 2025

Introduction

In May 2013 the 66th World Health Assembly endorsed a global monitoring framework comprising 9 global voluntary targets and 25 indicators for the prevention and control of noncommunicable diseases. One of the targets was a 30% relative reduction in the prevalence of current tobacco use in persons aged 15+ years by 2025 (30 by 25). Resolution WHA66.10 also called on Member States to adopt national targets and indicators based on the global ones.

In another international development, the 6th session of the WHO Framework Convention on Tobacco Control (FCTC) (http://www.who.int/fct/en/) Conference of the Parties adopted a decision calling on the Parties to:

- set national targets for 2015, taking into account the voluntary global target of 30% reduction;
- develop or strengthen national multisectoral policies and plans;
- accelerate the implementation of the WHO FCTC;
- encourage countries that are not yet Parties to consider ratifying the convention.

From the 2015 WHO tobacco trends report1, it is clear that the Eastern Mediterranean Region is facing a real challenge with tobacco trends: prevalence is projected to increase by 2025, meaning that the Region will not be able to achieve the target agreed at the World Health Assembly. More alarmingly, the situation at regional level will compromise the ability of other regions to collectively achieve the global noncommunicable disease and tobacco targets.

WHO is committed to supporting countries to adopt a target for tobacco reduction and to providing technical assistance towards realizing the international commitments regarding tobacco, the MPOWER measures2, noncommunicable diseases best buys and the Conference of the Parties decisions. Therefore, the WHO Regional Office for the Eastern Mediterranean organized a meeting in Tunis on 8–9 June 2015 on achieving the global target of 30% reduction in tobacco use by 2025.

The meeting was attended by senior health officials from 16 Member States, representing the tobacco control and noncommunicable diseases sectors, experts on tobacco control from the United States of America, Australia, Canada, Jordan and Oman and representatives from the WHO FCTC secretariat as well as WHO staff from country offices, from the Eastern Mediterranean, African and European regional offices, and from Headquarters.

The specific objectives of the meeting were to: i) present the results of the SimSmoke study3 and the implications for the tobacco target of 30 by 25; ii) agree on an approach to develop national tobacco reduction targets for 2025, considering the anticipated benefits of MPOWER based on SimSmoke projections; iii) identify barriers and bottlenecks in scaling up tobacco control towards achieving the national tobacco target by 2025; and iv) identify next steps and roles and responsibilities of the various partners to achieve national tobacco targets by 2025. The meeting aimed at bringing together Tobacco Free Initiative and noncommunicable diseases managers, which will be helpful in: adopting a holistic approach to tobacco control at the national level; facilitating joint use of limited resources and funds; aligning work plans for noncommunicable diseases units and the Tobacco Free Initiative, and developing of coordinated plans at the national level.

Tobacco situation in the Region

Achieving the tobacco 30 by 25 targets requires scaling up implementation of the WHO FCTC, and particularly the MPOWER demand-reduction measures, at the highest levels. However, in the current situation of low MPOWER adoption (only 2 countries in the Region have adopted at least 3 of the 6 MPOWER measures at the highest levels), scaling up action on MPOWER can benefit from regional evidence that demonstrates the anticipated returns.

Using the SimSmoke survey data, trends were derived considering the anticipated benefits of MPOWER based on SimSmoke projections; iii) identify barriers and bottlenecks in scaling up tobacco control towards achieving the national tobacco target by 2025; and iv) identify next steps and roles and responsibilities of the various partners to achieve national tobacco targets by 2025. The meeting aimed at bringing together Tobacco Free Initiative and noncommunicable diseases managers, which will be helpful in: adopting a holistic approach to tobacco control at the national level; facilitating joint use of limited resources and funds; aligning work plans for noncommunicable diseases units and the Tobacco Free Initiative, and developing of coordinated plans at the national level.


2 The WHO Framework Convention on Tobacco Control (WHO FCTC) and its guidelines provide the foundation for countries to implement and manage tobacco control. To help make this a reality, WHO introduced the MPOWER measures. These are intended to assist in the country-level implementation of effective interventions to reduce the demand for tobacco. More information on MPOWER can be found at: http://www.who.int/tobacco/mpower/en/

3 A study commissioned by WHO in 14 countries of the Region using the SimSmoke simulation model to project the impact of the adoption of the highest levels of MPOWER measures, individually and collectively, on reducing tobacco use and tobacco-attributable deaths.
than falling towards the 30% relative reduction set under the voluntary global target. Only one of these countries was on a downward track, but even there it is not expected that the target will be reached unless stronger action is taken.

The prevalence of tobacco use among youth and adults was highlighted, along with the MPOWER status and the most common gaps at regional level in each of the MPOWER policies; the evidence indicates that each policy will work once implemented. Evidence was presented that tobacco control does work when using a comprehensive rather than a selective approach. The data from a number of countries demonstrated that good results were achieved in reducing prevalence and protecting the public from exposure to tobacco through comprehensiveness, complementarity, multisectoral actions and countering the tactics of the tobacco industry.

It was noted that the WHO African and Eastern Mediterranean regions were the only two WHO regions likely to attain the voluntary global target for 2025, and that joint effort was needed in this area. The Health Information Systems unit works with the Tobacco Free Initiative to produce estimates of mortality attributable to tobacco for each country. It is expected that the damage caused to health (morbidity and mortality) will increase over time in the countries of the Region.

Conclusions
It was emphasized that a comprehensive approach to tobacco control will result in successful outcomes. The main outcomes of the meetings were:

- the process to develop national tobacco reduction targets for 2025 was initiated, adapting the global voluntary tobacco target of 30 by 25;
- a roadmap for each country was approved for scaling up, adopting and implementing MPOWER measures at the highest level to achieve national tobacco target by 2025.

Next steps
The next steps and roles and responsibilities of partners in implementing national activities to achieve national tobacco targets are shown in Box 1. The continued support of WHO is essential for bridging the gaps in tobacco control at the national level. There is a great need to support Member States in implementing tobacco health cost studies measuring socioeconomic impact, including both direct and indirect costs. Surveillance needs to be strengthened at the national level through regular data collection. Sharing information on tobacco use and experiences across regions and countries is essential for advancing control. The WHO FCTC secretariat should also reach out to countries to ensure they are able to fully utilize all the available FCTC tools.

There is a need to officially adopt the agreed target through communication between WHO and decision-makers at the highest level. Covering each country with national data sets, including SimSmoke projections, is essential to convince decision-makers of the positive impact of tobacco control.
**Box 1 Next steps**

**For WHO**

- Look into the possibility of holding a follow-up, interregional meeting for the WHO African and Eastern Mediterranean regions (at the highest possible level).
- Initiate follow-up missions to countries on the implementation of the agreed steps (with international experts).
- Raise political commitment and awareness on tobacco control among policy-makers.
- Request the WHO FCTC secretariat to better mobilize the available tools that are designed to support better implementation of the WHO FCTC at the national level.
- Initiate coordination between the WHO African and Eastern Mediterranean regions on tobacco control in the light of current trends.
- Communicate the decision and the target agreed in the meeting to the highest possible authority to ensure national commitment.
- Regularly follow up with countries on their tobacco control plans and activities.
- Share success stories and achievements at regional and global levels with the countries.

**For WHO country offices**

- Ensure that the national health authority is supportive and committed to the agreed national target.
- Identify jointly with ministries of health the next steps to achieve the action plan agreed upon during the meeting.
- Include the agreed-upon action plan in the upcoming Joint Programme Review and Planning Mission to secure funding for its implementation.
- Provide the needed technical support to countries to achieve the agreed-upon target.
- Conduct continued and regular evaluation of the achievements to quickly identify gaps, and work jointly with the national authority to bridge them.
- Share the scientific evidence and required tools (e.g. the Tobacco Questions for Surveys Guide) with national authorities to achieve the voluntary tobacco global targets.

**For the countries**

- Officially adopt the agreed upon national targets and priority policies through the Ministry of Health and higher level authorities.
- Communicate the agreed-upon target to the highest national health authority for consensus.
- Adopt and apply the guidelines for implementing Article 5.3 of the WHO FCTC to block tobacco industry interference.
- Develop country profiles on tobacco control measures based on the MPOWER data to identify gaps and accelerate the actions that have not yet been implemented.
- Take innovative actions to activate a multisectoral approach at country level to support national/subnational plans towards achieving the agreed upon target.
- Identify gaps in evidence related to the tobacco epidemic, and work to bridge them with national, regional and international partners, e.g. ratification of WHO FCTC Illicit Tobacco Trade Protocol.
- Take a comprehensive approach in national plans to address all tobacco products.
- Ensure the visibility of tobacco control as a national priority through creating partnerships/alliances with key stakeholders, including professional organizations, institutions, academia, youth and the media.
- Take the media on board through press conferences/workshops urging them to play a central role in advocating for tobacco control.
- Integrate the agreed-upon national tobacco control target and priority policies within the national noncommunicable diseases control plan.
- Explore all available possibilities to incorporate the Tobacco Questions for Surveys in all on-going national surveys.
Eastern Mediterranean Health Journal reviewers’ panel, 2015

The Eastern Mediterranean Health Journal extends sincere thanks the following experts for their generous and invaluable assistance in the review of papers considered for publication during the year 2015.

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